

HEWLETT® PACKARD

Expanding Possibilities

HP LaserJet 5P 5MP

SERVICE MANUAL



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WARNING

Electrical Shock Hazard

To avoid electrical shock, use only supplied power cords and connect only to properly grounded (3-hole) wall outlets.

Hewlett-Packard Company
11311 Chinden Boulevard
Boise, Idaho 83714

Conventions

This manual uses the following conventions:

Color is used to emphasize items which are important to the material under discussion.

The names of major printer parts and assemblies are Capitalized.

Bold is used for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or emphasis.

COMPUTER type indicates text as seen on a computer monitor.

Note

Notes contain important information set off from the text.

CAUTION

Caution messages alert you to the possibility of damage to equipment or loss of data.

WARNING!

Warning messages alert you to the possibility of personal injury.

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HP LaserJet 5P Printer Service Supplement

Overview

The HP LaserJet 5P and 5MP printers (HP Product Numbers C3150A and C3155A) have many service and repair processes in common with their predecessors, the HP LaserJet 4L/4ML and 4P/4MP printers. These processes are documented in the *Combined Service Manual* for the *HP LaserJet 4L/4ML (C2003A/C2015A) HP LaserJet 4P/4MP (C2005A/C2040A)*. The purpose of this appendix is to provide supplemental service information that is unique to the HP LaserJet 5P and 5MP printers.

Product Information

Printer Features

Features	
Print Speed	6 PPM
Text & Graphics Resolution	600 dpi; plus Resolution Enhancement Technology (REt)
Printer Languages **HP LaserJet 5P** **HP LaserJet 5MP**	 Enhanced PCL 5 PostScript Level 2[1] Enhanced PCL 5
Monthly Usage (pages)	Up to 12,000
Memory:	2MByte on-board standard memory
Tray 1 Capacity	100
Tray 2 Capacity	250
Output Tray capacity	100
Internal Typefaces **HP LaserJet 5P** **LaserJet 5MP**	45 PCL 45 PCL, 35 PS
Standard Interfaces	2 Parallel (B connector, C connector) 1 LocalTalk 1 SIR
Power Control	Power switch
NVRAM	Yes
Status Panel	2 Buttons 5 LEDs
Economode (toner saving)	yes
Min. Paper Size **(using flat paper path)**	3 x 5 inch (76 x 127mm)
[1]**SIMM includes 1 MByte additional memory.**	

Key Printer Locations and Parts.

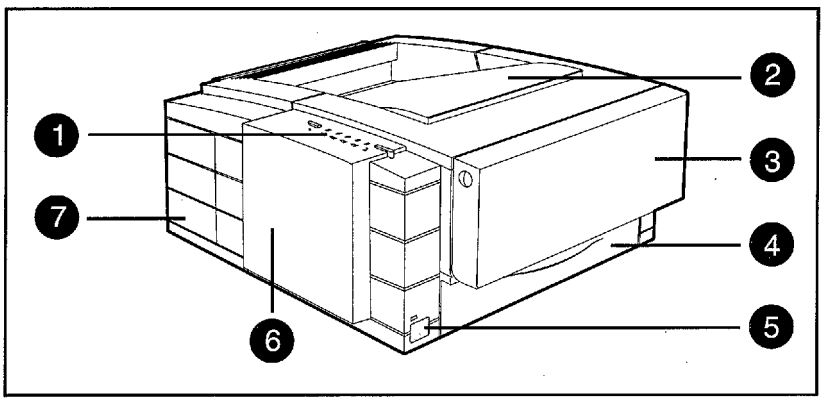


Figure 1 Front View

1. Status Panel
2. Top Output Tray
3. Tray 1 - MultiPurpose Tray
4. Tray 2 - 250-sheet Paper Cassette
5. Infrared Port and Status Light
6. Removable Side Panel
7. Interface Cable Door

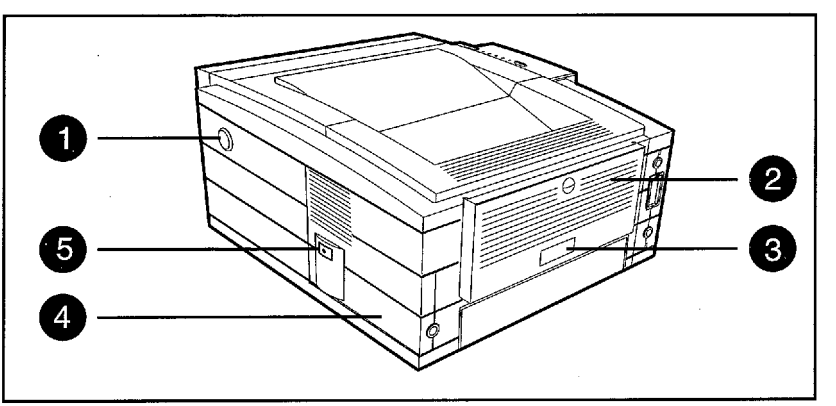


Figure 2 Rear View

1. Top Cover Release Button
2. Rear Output Tray
3. Serial Number Label
4. Power Cable Door
5. On/Off Button

Model and Serial Numbers

The model number and serial numbers are listed on identification labels located on the rear of the printer. The model number is alphanumeric, such as C3150A for the HP LaserJet 5P printer and C3155A for the HP LaserJet 5MP printer.

The serial number contains information about the Country of Origin, the Revision Level, the Production Code, and production number of the printer.

The rear labels also contain power rating and regulatory information as shown in Figure 3.

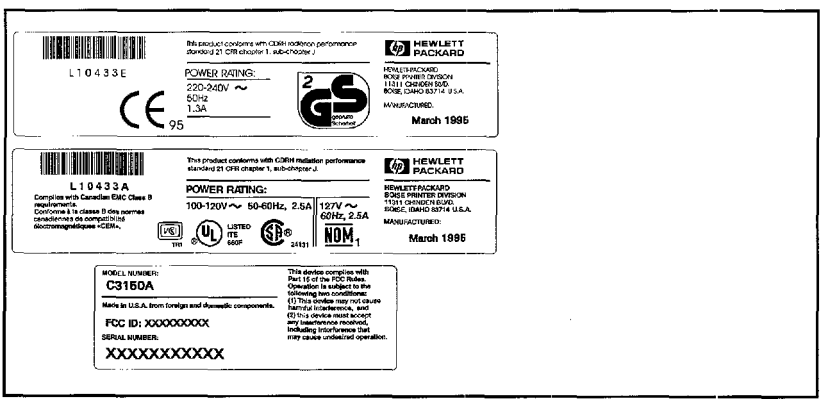


Figure 3 Sample Model and Serial Number Labels

Product Specifications

Dimensions	
Width	15.79 in. (401 mm)
Depth	17.38 in. (441.7mm)
Height	7.92 in. (201.1mm)
Weight	15.4 lbs. (7 kg)

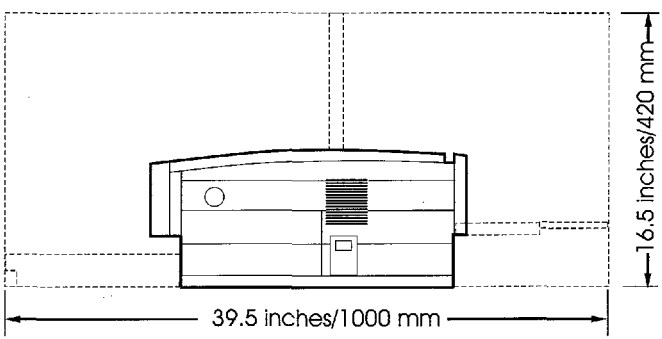


Figure 4. Location Space Requirements

Electrical Specifications

Power Requirements	100/120V (+/- 10%) 50/60Hz (+/- 2Hz) 127 Volts NOM	220/240V (+/- 10%) 50 Hz (+/- 2Hz)
Power Consumption (typical for HP LaserJet 5P and HP LaserJet 5MP)	During printing - 165 W (average)	During printing - 165 W (average)
	During standby – 5W (instant power save) During power save mode - 5 W	During standby – 5W (instant power save) During power save mode - 5 W
Minimum recommended circuit capacity	4 Amps	1.8 Amps

Environmental Specifications

Item	Operating Printing	Storage/Standby
Temperature (printer and toner cartridge)	59° to 89° F (15° to 32.5° C)	-4° to 104° F (-20° to 40° C)
Relative humidity	10% to 80%	10% to 90%

Acoustic Emissions (Per ISO 9296)

	Operator Position	Bystander (1m)	Sound Power
Printing	L_{pAm} 52dB(A)	L_{pAm} 46dB(A)	L_{WAd} 6.0 bels(A)
Power Save*	L_{pAm} <22dB(A)	L_{pAm} <22dB(A)	L_{WAd} <3.6 bels(A)

*In this mode, the printer is essentially quiet.

Documentation and Software

Documentation

You can order the documents listed below. There is a charge for some documents.

Table 1. Related Documentation

Title	Part Number
The *PCL/PJL Technical Reference Package* contains the following documents*	5961-0601
PCL5 Printer Language Technical Reference Manual. Explains the PCL 5 printer language for experienced users and programmers.	
Printer Job Language Technical Reference Manual. Explains HP's Printer Job Language (PJL) for experienced users and programmers.	
PCL/PJL Technical Quick Reference Guide.	
PCL Comparison Guide. Describes the different implementation of commands and extensions across the printer family supporting PJL and PCL 5.	
HP LaserJet 5P/5MP Printer User's Manual	C3150-90901
HP LaserJet 5MP Macintosh Notes* (included with HPLaserJet 5MP Printer and optional Adobe PostScript Level 2 SIMM)	C3155-90901
HP LaserJet Printer Family Paper Specification Guide*	5002-1801

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see the ordering information in "Parts and Diagrams" later in this chapter.

Software

The following software driver diskettes are shipped with the C3150A HP LaserJet 5P printer:

- The *HP LaserJet 5P DOS Utilities and DOS Printer Drivers* diskette. The DOS utilities include a Status Monitor and Remote Control Panel. The DOS printer drivers include WordPerfect (versions 5.1, 5.1+, and 6.0) and Lotus 1-2-3 (versions 2.3, 2.4, 3.1 and 3.4).

- The *HP LaserJet Printing System for Microsoft Windows 3.1 and 3.11* contains the PCL drivers and the HP FontSmart utility for font management.

The following software driver diskettes are shipped with the C3155A HP LaserJet 5MP printer:

- *The HP LaserJet 5MP Printer Software for Macintosh.* Supports System 6.07 to 7.5.

- The *PostScript Printer Software for Windows 3.1 and 3.11* includes the PostScript drivers and the HP FontSmart utility for font management.

New Product Features

The HP LaserJet 5P/5MP Status Panel

This HP LaserJet printer has been designed to be controlled mainly by software. However, some simple functions are also available from the status panel. You also receive status information about the operation of the IrDA-compatible infrared (IR) port from the status light just above the port (for more information, see "To Print Using the Infrared Port," later in this appendix).

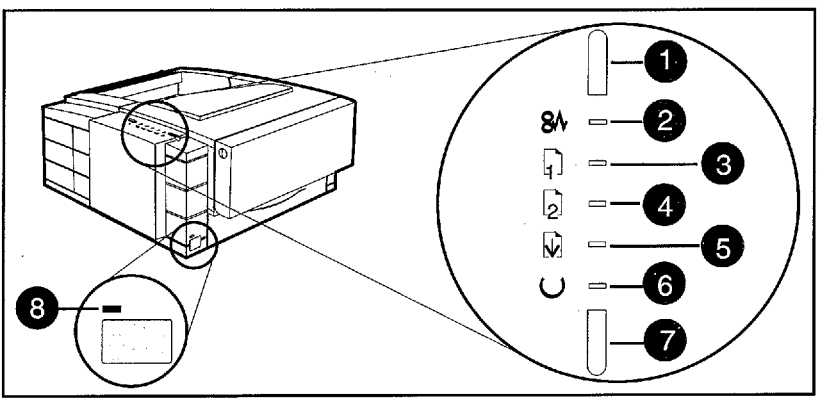


Figure 5 Status Panel Buttons and Lights

1. RESET button
2. ERROR status light
3. TRAY 1 status light
4. TRAY 2 status light
5. DATA status light
6. READY status light
7. GO button
8. IR port status light

The Status Panel consists of two buttons you use to complete certain tasks and five status lights that indicate the status of the printer (see Figure 5).

The GO and RESET Buttons

The printer has two buttons: GO and RESET.

Pressing the GO button:

- Tells the printer to resume printing.
- Prints a demo page. The printer must be in Ready Mode (the green Ready light on steady).
- Prints a self-test page when pressed simultaneously with the RESET button. The printer must be in Ready Mode (the green Ready light on steady).

Pressing the RESET button:

- Clears incomplete print jobs from the printer's memory.
- Clears errors.
- Removes all temporary fonts and macros.
- Returns all printer settings to the default values that you selected.

The Status Lights

There are five Status Panel lights on the printer:

- ERROR
- TRAY 1
- TRAY 2
- DATA
- READY

These lights indicate the current status of the printer by displaying an amber or a green hue and flashing individually or sequentially as a group (cascading).

The status light above the IR port indicates the current status of the IR port by displaying a green hue. This status light comes on only when the IR port is being used—the Status Panel lights operate the same for the IR port as they do for any other port on the printer.

ERROR (amber)

Indicates an error condition, such as a paper jam, missing toner cartridge, or the printer's top cover is open.

TRAY 1 (amber)
Tray 1 (the MP tray) is empty. Add paper to Tray 1. When the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.

TRAY 2 (amber)
Tray 2 (the Paper Cassette) is empty. Add paper to Tray 2.

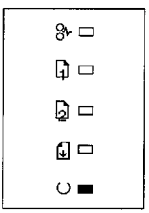
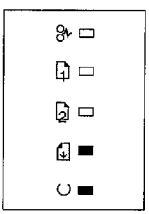
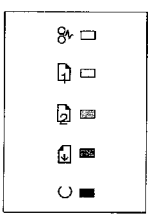
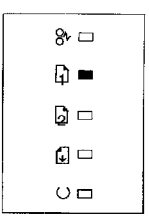
DATA (green)
When the Data light is on, the printer is printing. When the Ready light and the Data light are both on, the printer still has unprinted data in its memory. Either press GO to print the remaining data, or press RESET to clear the data from the printer's memory.

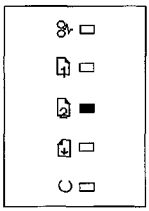
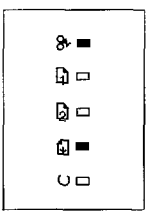
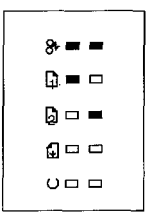
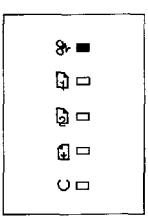
READY (green)
The printer is in Ready Mode when the Ready light is on. If the light is flashing, the printer is currently receiving data or in the process of printing.

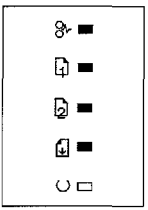
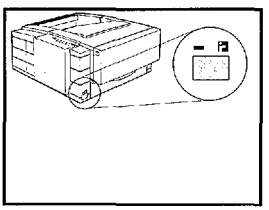
IR Port Status Light (green)
If this light is on, it indicates that an infrared (IR) connection has been established.

Common LED patterns

The chart following shows the light patterns for normal HP LaserJet 5P/5MP printer states.

Light Pattern	Description
	The printer is in Ready Mode and is ready to print. Press the GO button to print a demo page. Press the GO and RESET buttons to print a self-test page.
	The printer has received data. If the Ready light is flashing, the printer is processing the data—wait for the next page to be printed. If the Data light and the Ready light are both on for an extended period of time (the Ready light does not begin to flash), press the GO button to print the next page. A document or page may take a long time to print if, for example, the document or page contains complex text or graphics.
	The printer is warming up or resetting after you have pressed the RESET button. The lights on the Status Panel "cascade" (each light turns on and off sequentially) until the printer is ready to print.
	Tray 1 (the MP Tray) is empty. Add paper to the tray. If the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.

Light Pattern	Description
	Tray 2 (the Paper Cassette) is empty. Add paper to the tray.
	A data error has occurred. Press the GO button to continue printing (some data may be lost). For more information, see "Data Error Light Patterns," later in this appendix.
	A SIMM error has occurred. Make sure your SIMM is installed correctly. Replace the SIMM that caused the error. Or press the GO button on the printer to continue without configuring the SIMM that caused the error. If the SIMM has more than one bank of memory, the good banks will be automatically configured.
	A recoverable error has occurred, such as a paper jam, the top cover is open, or the toner cartridge is missing.

Light Pattern	Description
	A fatal error has occurred. Turn the printer off and then back on. If the same light pattern reappears, turn the printer off again and leave it off for about 10 minutes, then turn it back on. If the same light pattern reappears. refer to the discussion of Fatal Errors in "Troubleshooting."
	When the IR port status light is on, a connection has been established. If you are printing to the IR port and the status light does not come on, make sure the printer is in Ready Mode and that the IR port you are printing from is within range of operation and is IrDA-compliant. If you continue to have trouble printing, refer to the "Infrared Port Not Responding" table, later in this section.

Paper Movement Overview

The paper feed system picks print media automatically from the paper cassette or accepts it from the manual feed slot and delivers it to the image formation system at precisely the right time. The system then feeds the media to the fusing station, and delivers the finished product to the output position, either the face-down output tray on top of the printer, or through the face-up delivery slot at the rear of the printer. The output path is user-selectable by opening the rear output tray.

Figure 6 shows the possible paper paths and locations of the various solenoids, photosensors and rollers.

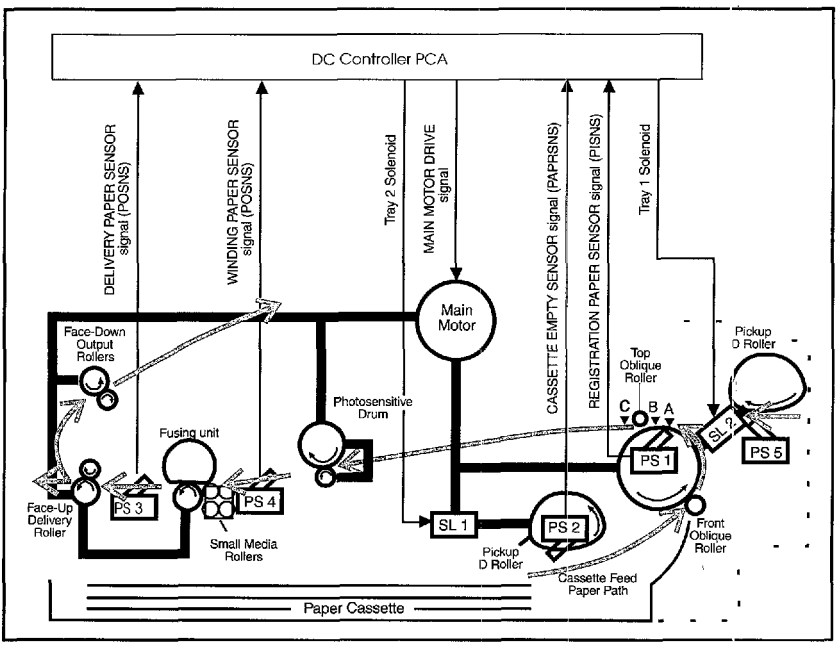


Figure 6 HP LaserJet 5P Printer Paper Path

PS1 Input Paper Sensor
PS2 Tray 2 Paper Out Sensor
PS3 Exit Paper Sensor
PS4 Winding Paper Sensor
PS5 Tray 1 Paper Out Sensor

Input Paper Sensor (PS1) Positions:
A = Manual Feed Sense Position
B = Registration Sense Position
C = TOP Sense Position

SL1 Tray 2 Solenoid
SL2 Tray 1 Solenoid

Infrared Communication

The HP LaserJet 5P and 5MP printers are equipped with an Infrared Datalink Association (IrDA) compliant port. The IrDA specification allows "wireless" transmission of print data between a wide variety of hosts (primary) and peripheral (secondary) devices. A primary device -- such as a PC or laptop computer -- is capable of reading and writing data to another primary device or writing to a secondary device, such as a printer. Secondary devices are read-only; they cannot initiate its own communication, and can only respond to a host command when properly addressed.

The IrDA protocol uses a transceiver chip in both devices to send and receive data packets. The packets are checked for validity, and a response is sent by the secondary device indicating whether the packets were complete or in error.

The IrDA protocol is contained in three layers:

- The physical electronics are the hardware elements in each device for sending and receiving the data.
- The Link Access Protocol (LAP) layer controls the physical layer, packetizes/unpacketizes data, and sets transmission rates.
- The Link Management Protocol (LMP) layer routes data to and from the host operating system (DOS/Windows).

The data flow is shown in Figure 7.

The LAP and LMP layers can reside in either firmware, software, or a combination of both. There are different LAP and LMP protocols for primary and secondary devices.

The HP LaserJet 5P printer has the complete secondary protocol, and any host trying to communicate via the infrared (IR) port must have the complete primary protocol installed. *The primary protocol software is the responsibility of the host supplier. It is not provided by Hewlett-Packard Company with the printer.*

IrDA communications can be obtained either via an internal IR port or an external IR accessory. Several manufacturers offer complete accessory upgrades for both host and peripheral devices.

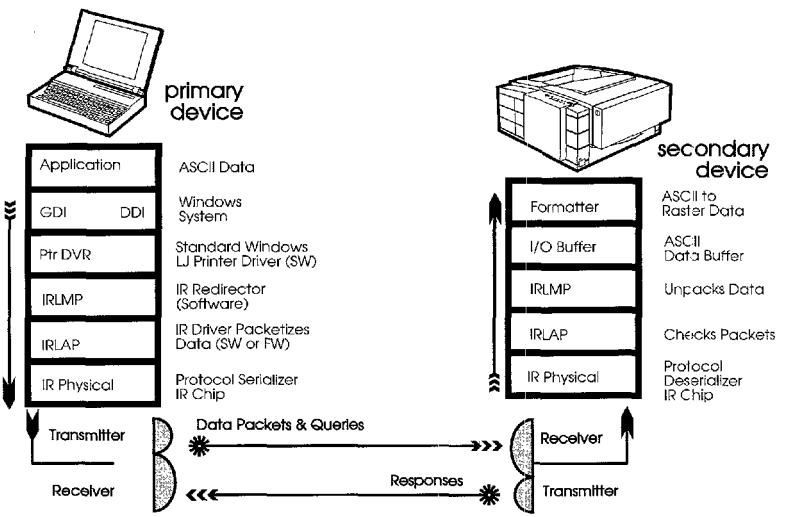


Figure 7. IR Data Flow.

System Requirements

- Hardware
- Both the primary and secondary devices must be equipped with an IrDA-compliant IR component. Older, non-IrDA-compliant devices may not be compatible with the HP LaserJet 5P/MP printers.
- Software
- The primary device must be loaded during boot-up with software provided by the manufacturer for infrared operation.
- The primary device must be properly configured with an infrared COM port, IRQ level, and base address value.
- The infrared port must be installed and selected in the Printers section of the Windows Control Panel.

To Print Using the Infrared Port

The infrared (IR) port on your HP LaserJet 5P or 5MP printer is located on the lower front left corner of the printer (Figure 8). This port is compliant with the specifications determined by the Infrared Data Association (IrDA). Just above the port is a status light that indicates when the port is activated. To use the IR port, you need to use a portable device that also includes an IrDA-compliant IR port and be within the range of operation (see Figure 9).

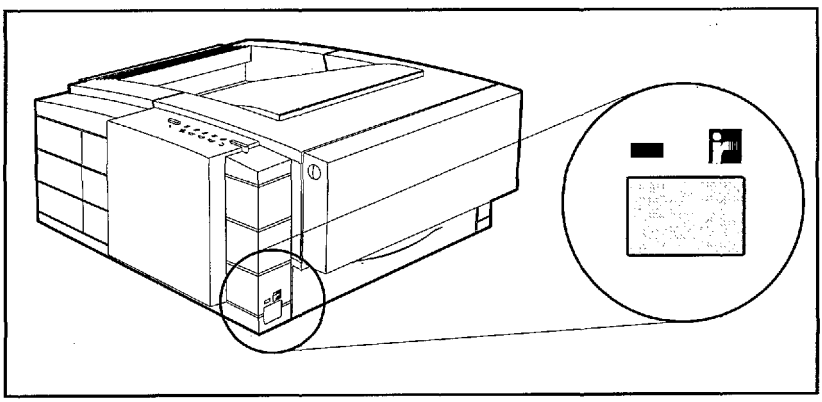


Figure 8 IrDA Port Location

The IR port is compatible with a wide variety of IrDA-compliant portable devices; however, the method for printing will vary depending on the type of device and the operating system in use. Refer to the instruction manual for your portable equipment for specific instructions on printing from that device.

The IR port works by receiving data similarly to a serial port, however, without a cable and operates at speeds of up to 115 k bits per second. When the IR connection is established, the status light comes on. If the connection is broken or when the print job is complete, the status light goes off.

1. Make sure the printer is in Ready Mode (the Ready light is on).

2. Align your laptop computer (or other portable equipment) that is equipped with an IrDA-compliant IR port within 3 feet

(1 m) of the IR port on the printer and at an angle of ±15 degrees to ensure printing (Figure 9).

3. Send the print job. The status light above the IR port turns on (printing a complex document or using a software print spooler on your PC may delay the time it takes for the IR status light to turn on). If the status light does not turn on, realign the port on your portable equipment with the port on the printer, resend the print job and stay within the range of operation during printing.

4. If you have to move the device, for example, to add paper, make sure you stay within the range of operation to maintain the connection. If the connection is interrupted before your print job is complete, the IR port status light will turn off. You have from 3 to 40 seconds (depending on the host implementation) to correct the interruption and continue the job. In this case, the IR port status light turns back on.

5. The connection can be permanently broken (interrupted for more than 3 to 40 seconds) if the "sending" IR port is moved out of the range of operation or if anything passes between the two ports to block the transmission, such as a hand or piece of paper, or even direct sunlight. In this case, the job needs to be reprinted.

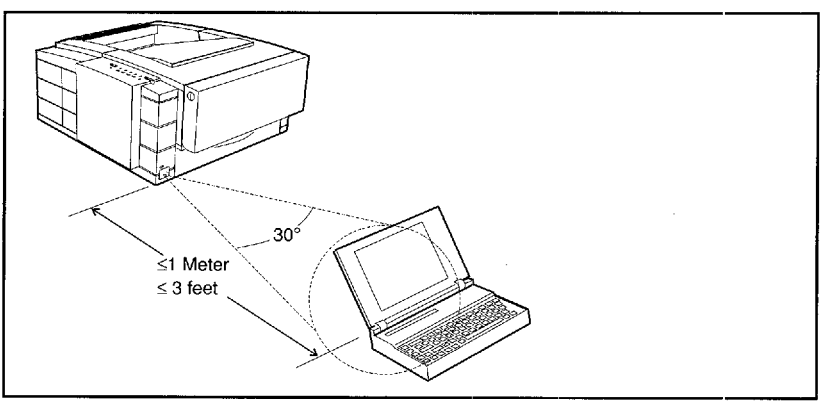


Figure 9 IRDA Port ranges

If you still have problems printing, make sure you are using an IrDA-compliant device and proper software and have selected the proper port for printing. See "Infrared Port Not Responding" on page 65.

Note The IrDA standard for infrared communications represents an emerging technology. Older non-IrDA-compliant portable devices may not be compatible with your HP LaserJet 5P/5MP printer. If you continue to have problems printing using the IR port, contact the manufacturer or dealer where you purchased your portable device to verify compatibility with the IrDA standard, and follow the troubleshooting procedure immediately following.

Troubleshooting IR Printing Problems

IR printing problems may be caused by any of the several system components or by lack of proper configuration. The following checklist will help determine the source of the problem.

6. Verify the user is operating the printer and PC as described in the User's Manual: less than one meter between devices, and not more than ±15 degrees from direct center.

7. Verify the host PC or laptop and the printer are IrDA-compliant and have the necessary hardware components for IR communication.

8. Verify the IR software has been loaded on the primary device. (This is system software and should be available from the PC manufacturer.)

9. Verify the host PC or laptop is properly configured. Check the port assignment, the IRQ level, and the base address value. Check both the DOS AUTOEXEC.BAT and CONFIG.SYS files, and the Windows system configuration.

If all these elements are properly installed and configured, use the IR test tool to test the IrDA protocol transmission and device operation. This tool for troubleshooting IR communication problems, shown in Figure 10, has been developed by Genoa Technology, Inc., in cooperation with Hewlett-Packard. The part number is 5062-4661 and can be ordered through HP Parts Direct Ordering.

The IR test tool can be used with any IrDA-compliant primary or secondary device, regardless of manufacturer.

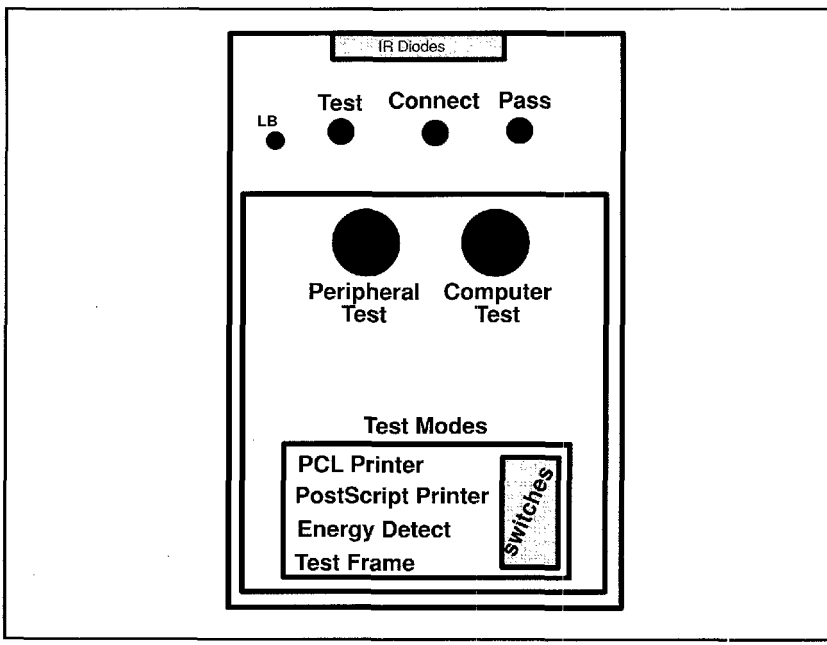


Figure 10 Infrared Test Tool

To test the peripheral device:

1. Put the HP LaserJet 5P in Ready Mode.

2. Press the "Peripheral Test" button on the test tool. The LEDs on the test tool will sequence.

If the "PASS" LED lights, the test was successful, indicating that communication with the printer's IR port is functioning normally. On HP LaserJet printers, a self-test page will be initiated by the test.

If the "TEST" LED goes out and the "PASS" LED fails to light, the printer's IR port is not functioning correctly; check the operator's instructions included with the IR test tool.

To test the host computer:

1. Place the test tool on a table in front of the PC's IR port

2. Press the "Computer Test" button. The test tool will sequence the LEDs.

If the "PASS" LED light, the test was successful, indicating that communication with the printer's IR port is functioning normally.

If the "TEST" LED goes out and the "PASS" LED fails to light, the host's IR port is not functioning correctly.

Interface Connections

Your HP LaserJet 5P or 5MP printer supports the following interfaces (see Figure 11):

- Two IEEE-1284–compliant parallel ports at the back of the printer—one large B-type and one small C-type.
- One LocalTalk port at the back of the printer.
- One IrDA-compliant infrared port at the front of the printer.

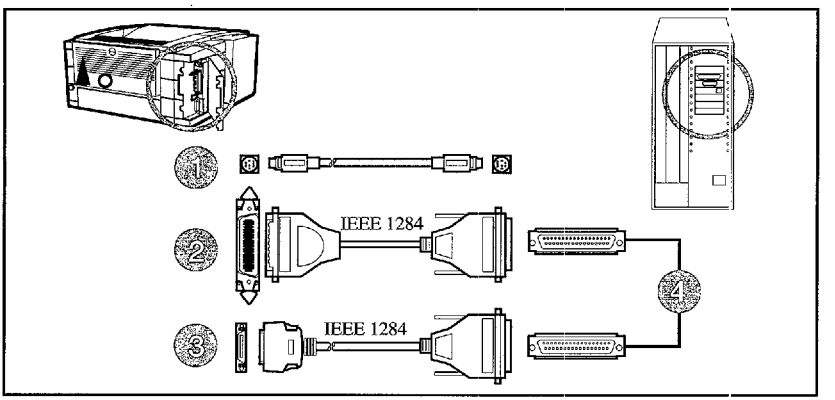


Figure 11 HP LaserJet 5P/5MP Printer Interface Connections

1. LocalTalk cable and connectors.
2. IEEE-1284 parallel cable and large (B-type) printer connector.
3. IEEE-1284 parallel cable and small (C-type) printer connector. (The cable will be stamped as IEEE-1284 compatible.
4. Host PC connector (A-type) (in the future C-type connectors may also be available on host PCs).

Caution Make sure that all power and interface cables on your printer and host computer are properly grounded and in compliance with local electrical codes.

The Parallel Printer Interfaces

These interfaces are compliant with IEEE-1284 specifications for "Compatibility Mode" and "Nibble Mode" or "HP Bi-tronics". To use advanced interface functions, such as bi-directional communication, the parallel port on your host PC must also be IEEE-1284 "Nibble Mode" compatible.

The small "C" connector offers IEEE-1284 II (level 2) electrical interfacing, i.e. support for cables up to 10 meter length. The large "B" connector supports standard cable lengths up to 3 meters.

The parallel interfaces can operate at speeds of up to 2 MBytes per second. Use a high-quality, shielded IEEE-1284 compliant parallel interface cable to insure best performance and support of advanced interface functions such as bi-directional communication. Compliant cables are marked with "IEEE-1284" on the cable.

Applications such as the Remote Control Panel, Status Monitor, or the Status Window use the printer's parallel interface to send status information back to the computer (bi-directional communication). This requires a direct connection from the computer to the printer via a local parallel port (for example, LPT1:, LPT2:). These applications may not work through a network or a switching device.

Connecting to Networks and Switchboxes

Most devices connected between the printer and the host computer prevent the printer from sending data back to the computer. Therefore, the Remote Control Panel, Status Monitor, and Status Window may not work with networks, most hardware print spoolers, some software print spoolers, and some switchboxes. Newer sharing devices are available that fully support status feedback. Check with your supplier on support for bi-directional communication.

Automatic I/O Switching

The printer automatically switches between all interfaces (parallel, infrared, and LocalTalk) when multiple users share the printer.

Resource Saving

Resource Saving gives the printer the ability to save certain entities such as permanent soft fonts, macros, symbol sets and user-defined graphics patterns when the printer changes personalities, resolutions or page protect modes. For example, if a user switches the printer from PCL mode to PostScript mode, all PCL soft fonts and macros are lost.

With resource saving, the HP LaserJet 5P/5MP printer can retain these in memory. When the user switches back to PCL from PostScript all of the PCL entities would still be resident in the HP LaserJet 5P/5MP printer. Resource Saving can be changed via software, but can only be accessed when the printer has the PostScript language installed and a minimum memory configuration of 7 MB.

Resource Saving can be set via software for one of three modes, AUTO (default), ON, and OFF. Auto configuration sets the Resource Saving for PCL and Postscript to a minimum value (400 KBytes) for each personality. Setting Resource Saving to ON allows the user to determine how much printer memory will be used for Resource Saving for the PCL personality and the Postscript personality. The memory can be allocated in 100 KBytes increments. For example, if the user sets the Resource Saving memory size to 200 KBytes, a total of 400 KBytes of memory will be assigned to Resource Saving. 200 KBytes of memory will be used for Postscript Resource Saving and 200 KBytes of memory will be used for PCL Resource Saving. Turning Resource Saving OFF disables the Resource Saving function and no memory is allocated to Resource Saving.

I/O Buffering

I/O buffering allows the user to allocate printer memory to hold the job while it prints, freeing up the host system sooner, like a print spooler. The standard printer has approximately 10 KBytes of memory allocated to I/O buffering and an additional 100 KBytes of memory is assigned to I/O buffering for each MBytes of memory added to the printer.

If the printer has a minimum of 6 MBytes of memory installed, the I/O buffer size can also be adjusted via software. Three settings exist for the I/O buffer; AUTO (default), ON, and OFF. AUTO sets the printer's I/O buffer to a minimum value that is determined by the total amount of memory that is resident in the printer. Setting I/O buffering to ON allows the user to set the I/O buffer size Setting the I/O buffering to OFF disables I/O buffering .

Note When you change the I/O buffer setting all downloaded resources are deleted.

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Service Mode, PJL Defaults

The Service Mode should be used only by authorized service personnel. While in Service Mode, you can:

- Print a Service Mode Self Test.
- Verify and set the Page Count (the page count also is displayed on the standard self test).
- Set the Cold Reset Default. (This sets the factory default paper size to either Letter or A4).
- Set the Demo Page=True/False. Used to remove the Demo Page option from the self test menu.
- Set the Diagnostic Functions ON or OFF (for software developers use only).

Since the HP LaserJet 5P/5MP printer does not have a front control panel, Service Mode and many configuration tasks are accessible only through software (PJL commands).

The following example shows how to use PJL commands to enter Service Mode and perform various Service Mode configuration tasks.

Note Text is CASE-sensitive in PJL; enter exactly as shown. The $^{E}_{C}$ symbol stands for the ASCII escape character (ESC or /027). When the PJL code is entered, print the data file (or use the DOS COPY command to copy it to the printer).

Detailed explanations of PJL commands and their functions can be found in the Printer Job Language Technical Reference Manual (HP part number 5961-0704).

Common PJL Commands

PJL Command	Explanation
E_C%-12345X@PJL	Start PJL job.
@PJL SET SERVICEMODE=HPBOISEID	Enter Service Mode
@PJL SET PAGES=0	Set page count [= xxxxx]
@PJL SET CRPAPER=LETTER	Sets cold reset page size [= Letter/A4]
@PJL SET SKIPDEMO=FALSE	Skips demo/PCL type page [= true/false]
@PJL SET DIAGNOSTICS=OFF	Sets diagnostics [= OFF/ON] (for ISV use)
@PJL SET SERVICEMODE=EXIT	Exits Service Mode
@PJL DEFAULT PAPER=LETTER	Selects user paper size default
@PJL RESET	Performs PJL reset
E_C%-12345X	Exits PJL mode
E_Cz	Prints Self-Test page
E_CE	Resets the printer.
Other PJL Command examples:	
@PJL INITIALIZE	Sets user environment to factory defaults.
@PJL SET ECONOMODE=ON	Sets Economode
@PJL SET PAGEPROTECT=LEGAL	Sets the memory size for page protection to LEGAL paper size.
@PJL SET MANUALFEED=ON	Sets manual feed mode.
@PJL SET LANG = *FRENCH, GERMAN...*	Sets the default display language[1]

[1] Do not confuse this command with @PJL ENTER LANGUAGE, which sets the printer language to PCL or PostScript.

Test Pages and Resets

Test pages, resets, and NVRAM initialization can all be performed by using the GO and RESET buttons on the HP LaserJet 5P/5MP printer status panel. Table 2 shows how to perform these tests and diagnostic functions.

Table 2. Button Functions

FUNCTION	ACTION	RESULT
Self Test	Press GO and RESET buttons simultaneously.	Prints a Self Test page.
Continuous Self Test	Hold GO button *more* than 20 seconds after powering on printer	Prints continuous self test pages. Press the button to stop printing.
Reset (all I/O)	Press RESET button.	Clears all data from memory, including unprinted data, downloaded fonts and macros.
Continue	(Waiting for paper, or continuable error.) Press the GO button.	Allows the printer to recover and continue printing the job.
Form Feed	Press the GO button.	Print remaining data in printer memory.
Cold Reset	Hold RESET button *less* than 20 seconds after turning power on.	Clears all data from memory, including unprinted data, downloaded fonts and macros. Resets printer to factory default settings.
NVRAM Initialization	Hold RESET button *more* than 20 seconds after turning power on.	Clears all I/O and print configuration information from NVRAM.
Service Error Codes	Press GO and RESET buttons to display additional code.	See "Troubleshooting" to determine the problem and solution.

Printing a Self-Test Page

You can print a self-test page to get information about your printer's current settings, options, and print quality. You can use this page to troubleshoot print quality problems and to view current print density and Resolution Enhancement settings so you can adjust them.

You can also print the demo, or demonstration, page to quickly check that the printer is operational.

To print a self-test page:
Simultaneously press the GO and RESET buttons on the printer's Status Panel while the printer is in Ready Mode.

Or using the HP LaserJet PCL Windows Printer Driver, under "Device Option", select the "Configure Printer" button and choose "PCL Self-Test Page".

Or using the Remote Control Panel (in DOS), under "Options" select "Print Test Page" and choose "PCL Self-Test Page".

Figure 12 shows a sample self-test page. Numbers in the sample self-test page match numbers in the Key to Figure 12 , which follows the illustration. The appearance of the self-test page varies depending on the options currently installed in your printer.

Note The factory default for the self-test page is English. A PJL command is required to change the self-test language to appear in a language other than English. Refer to the discussion of PJL commands on page 31

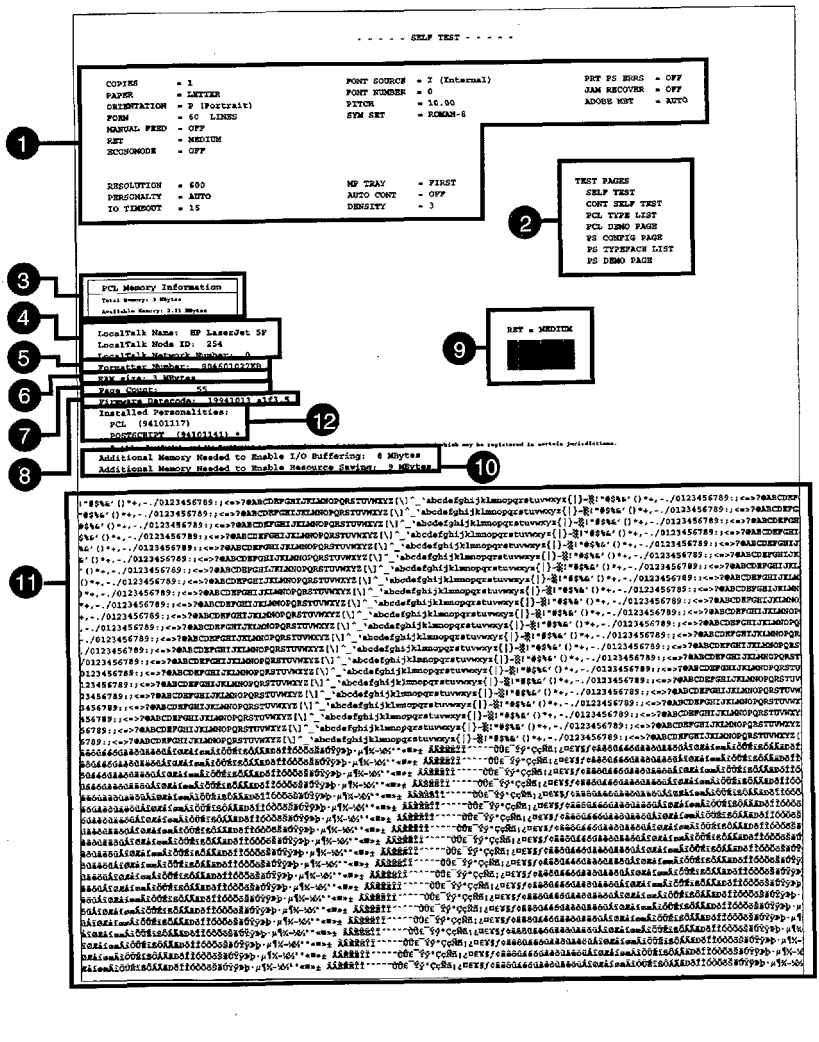


Figure 12. HP LaserJet 5P Self-Test Page

Key to Figure 12. Self-Test Page

Item	Explanation
1	**Printer Options:** Lists printer options you can adjust using your printer software (see Appendix F, "Software Procedures").
2	**Test Pages:** Shows test pages you can print from your printer.
3	**PCL Memory Information:** Shows the total amount of installed memory. Also indicates the amount of available memory for PCL applications.
4	**LocalTalk Name/Node ID/Network Number:** If your printer is connected to a LocalTalk network, shows the network name, node ID for your printer, and the network number.
5	**Formatter Number:** Shows serial number of internal electronics board.
6	**RAM size:** Shows total installed printer memory.
7	**Page Count:** Shows number of pages the printer has printed.
8	**Firmware Datecode:** Eight-digit date (YYYYMMDD) of formatter firmware.
9	**Resolution Enhancement:** When resolution is set to 600 dpi, the Resolution Enhancement technology (REt) block appears here. The REt block illustrates current resolution enhancement (see "Fine-Tuning Print Quality," in Chapter 2, "Printing").
10	**I/O Buffering and Resource Saving:** Information about the current configuration appears here. If the printer does not have enough memory installed to enable I/O Buffering or Resource Saving, the amount of additional memory needed appears here.
11	**Print Pattern:** Illustrates print density and quality.
12	**Installed Personalities:** Shows which printer languages (personalities) are installed.

Life Expectancy of Consumables

Always inspect the components listed in the following table for wear when servicing the printer. Replace these components as needed, based on printer failures or wear, not strictly on usage.

Table 3. Life Expectancy of Consumables

	DESCRIPTION	PART NO.	QTY	EST. LIFE (pages)	REMARKS
1.	Toner Cartridge	C3903A	1	4000[1]	When print becomes faint, shake cartridge to distribute remaining toner.
2.	Tray 1 Pickup Roller	RG5-2205-000CN	1	100,000	Replace roller and separation pad together.
3.	Tray 2 Pickup Roller	RB1-6332-000CN	1	100,000	Look for glazing and cracks.
4.	Separation Pad	RF5-0343-000CN	1	100,000	Look for glazing and grooves. Replace together with Pickup Roller.
5.	Transfer Charging Roller	RF5-1287-000CN	1	100,000	May affect print quality and/or paper jams.
6.	Fuser Assembly (115 V, 50/60 Hz)	RG5-1700-000CN	1	100,000	May affect print quality and/or paper jams. Look for marks on rollers.
	Fuser Assembly (220 V, 50 Hz)	RG5-1701-000CN	1	100,000	
7.	Exhaust Fan	RG5-1801-000CN	1	25,000 hrs.	

[1]The estimated Toner Cartridge life is based on A4 or letter size prints with an average of 5% toner coverage, and with the density setting at 3.

Removal and Replacement

Overview

The removal and replacement procedures for many HP LaserJet 5P printer Field Replaceable Units (FRUs) are identical to the HP LaserJet 4L and 4P printers. This section describes only those differences unique to the HP LaserJet 5P for removing:

- Power Door
- I/O Cover
- Left Side Cover
- Top Cover
- Tray 1 Pickup Assembly
- Formatter Board Assembly
- Fuser Assembly
- DC Controller Assembly

WARNING! Unplug the power cord from the power outlet before attempting to service the printer. If this warning is not followed, severe injury may result.

Never operate or service the printer with the protective cover removed from the Laser/Scanner Assembly. The reflected beam, although invisible, can damage your eyes.

CAUTION The printer contains parts that are electrostatic discharge (ESD) sensitive. Always service printers at an ESD protected workstation.

To install a self-tapping screw, first turn it counter-clockwise to align it with the existing thread pattern, then carefully turn clockwise to tighten. **Do not over-tighten.** If a self-tapping screw-hole becomes stripped, repair of the screw-hole or replacement of the affected assembly is required.

Note Always remove the toner cartridge and the paper cassette from the printer before removing or replacing printer parts.

Required Tools

Refer to page 6-3 of the Combined Service Manual.

A TORX T-10 head screwdriver is needed to remove the formatter shield.

Removing the Power Door

The Power Door is located on the right rear of the printer.

1. Ensure the power to the printer is turned OFF.
2. Grasp the power door by the finger slot directly above the power cord, and swing the rear of the door out and forward. The door easily tilts and lifts out.
3. Unplug the power cord from the printer power socket.

Removing the I/O Cover

The I/O Cover is located to the left rear of the printer.

1. Locate the two release tabs shown in Figure 13. Press the tabs in, and swing the rear of the door out and forward. The door easily lifts away from the printer.

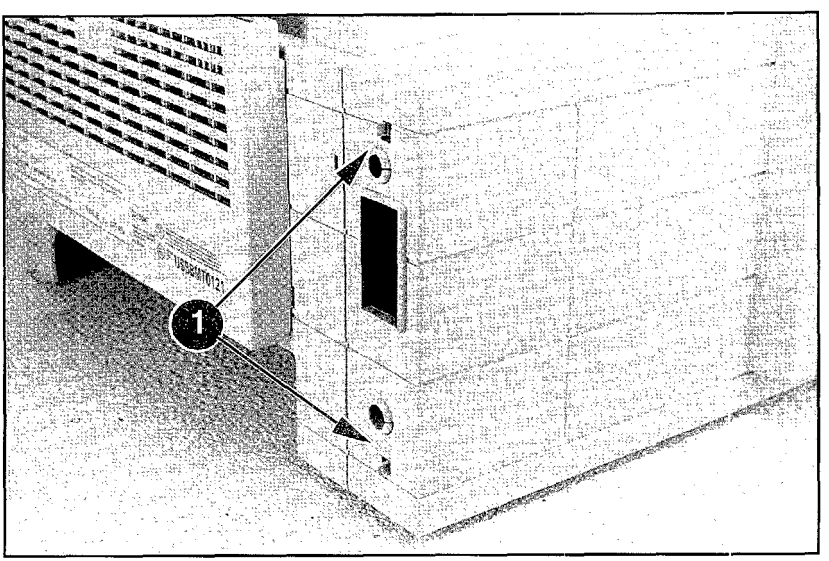


Figure 13 I/O Cover Release Tabs

Removing the Left Side Cover

1. Disconnect all I/O cables.

2. Press the Top Cover Release button on the right side of the printer, and open the top cover.

3. Press the removable side panel release latch shown in Figure 14.

4. Slide the cover forward and pull straight away from the side of the printer.

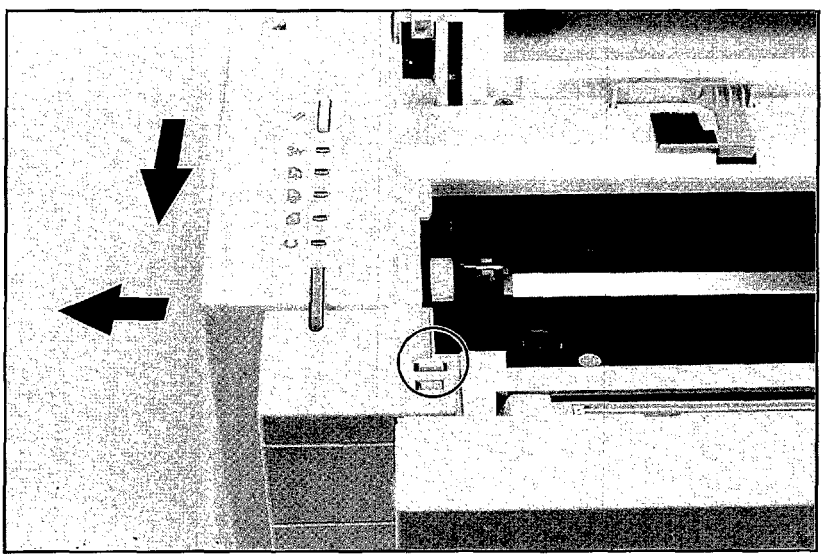


Figure 14 Left Side Cover Release Latch

Removing the Top Cover

1. Remove the toner cartridge and paper cassette if they have not already been removed.

2. Remove the (4) self-tapping printer cover screws (Figure 15).

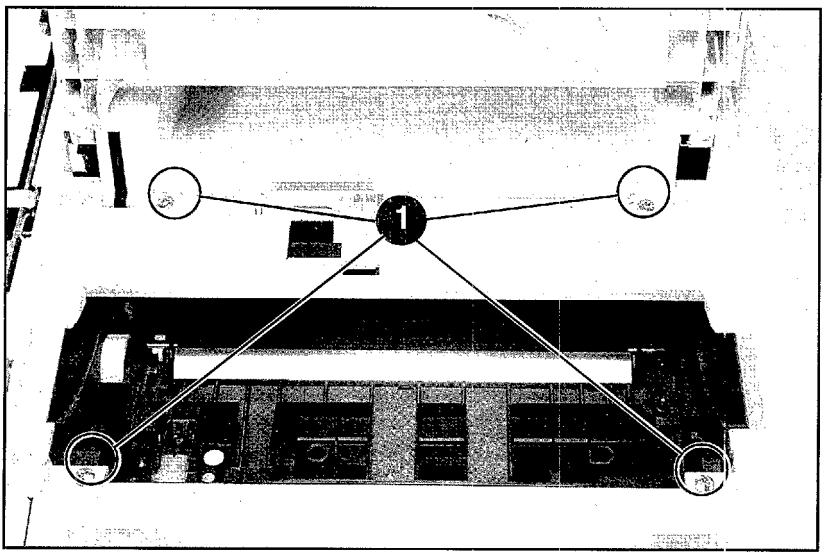


Figure 15 Removing the Top Cover Screws

3. Grasp the lower left front corner of the top cover, and lift it forward and up.

4. Grasp the lower portion of the right front cover, and pull forward and up.

5. At the rear of the printer, lower the face-up output tray.

6. Lift the rear of the printer slightly. Grasp the lower right back corner. With your thumbs, flex the plastic toward you, up, and out. Figure 16 shows this process for the rear right corner. Repeat the process for the left rear corner.

Note Note the position of the tabs and the catches carefully. This step may require considerable twisting and flexing of the plastic in order to free the release tabs.

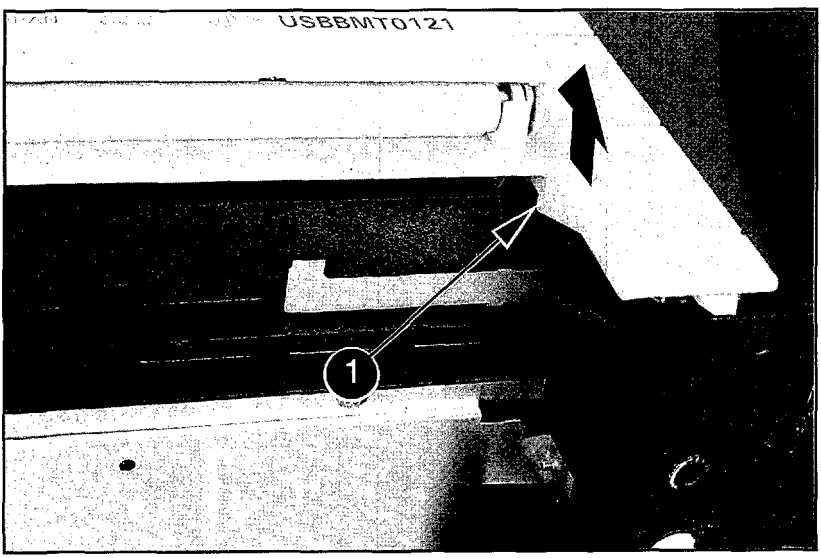


Figure 16 Releasing the Back Corner of the Top Cover.

7. Lift the printer cover straight up.

Replacement Note

When reseating the top cover onto the printer frame, ensure the black paper-out flag in front of Tray 1 is seated in the groove of the Tray 1 lift plate. If not in the groove, it can easily break when the cover is forced into place. Refer to Figure 17

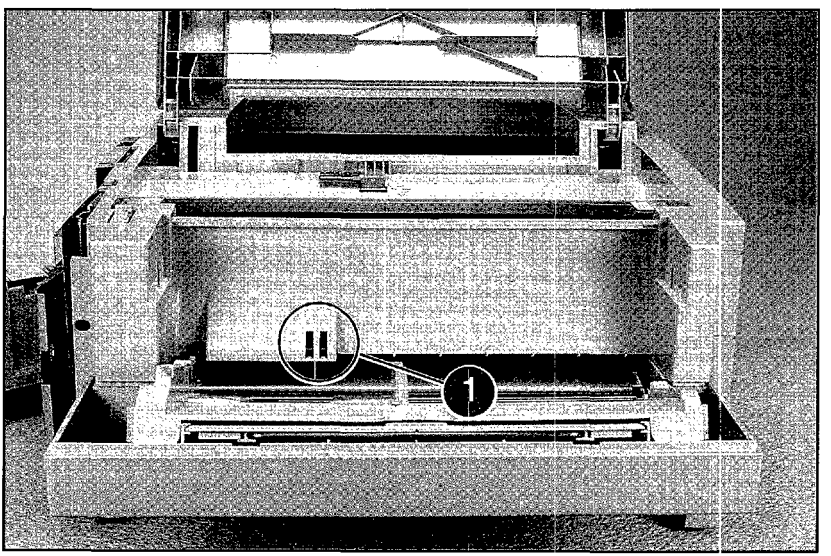


Figure 17 Paper-Out Flag

Removing the Tray 1 Pickup Assembly

1. Remove Tray 1 by opening the tray at a 45° angle and pulling up on the tray (Figure 18).

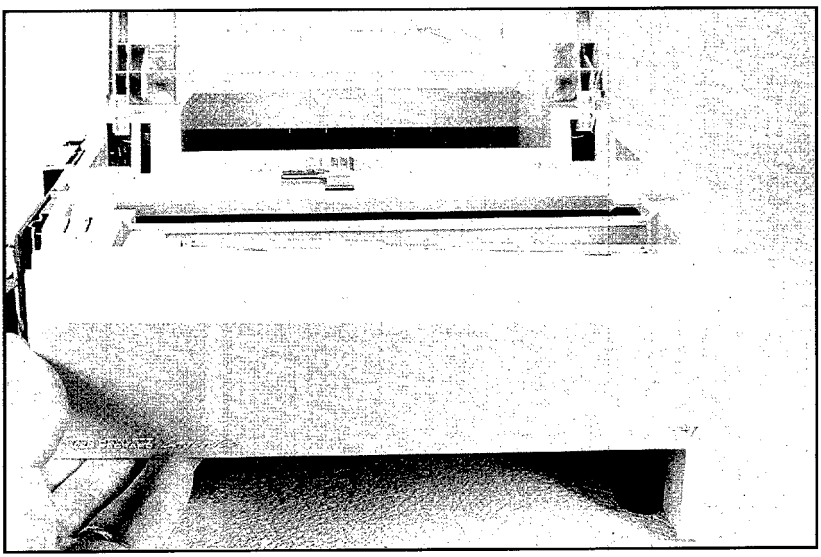


Figure 18 Removing Tray 1.

2. Unplug the two cables (Callout **2** in Figure 19) by grasping the cables where they attach to the plug and pulling straight back.

3. Route the cables through the right side of the printer chassis and bring them to the front.

4. Remove the 5 screws (callout **1** in Figure 19) from the front of the pickup assembly. (Two screws are adjacent in the lower left corner.)

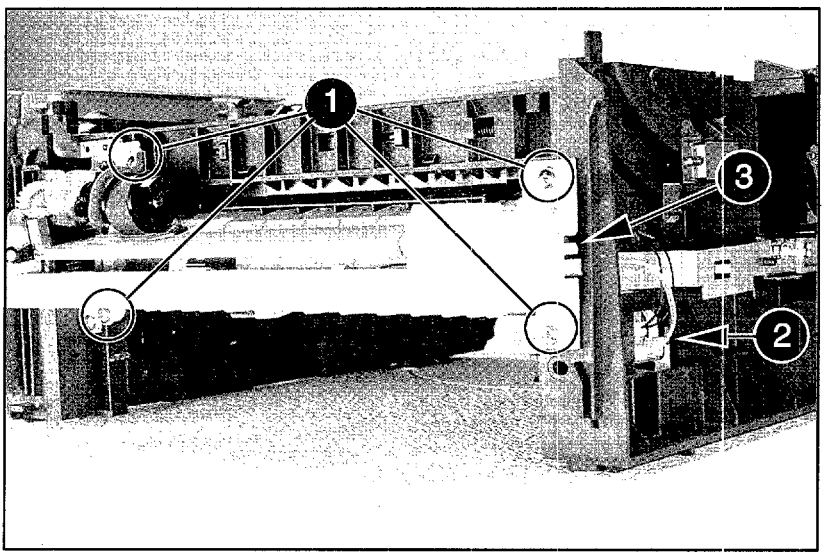


Figure 19 Tray 1 Pickup Assembly Locations.

5. Press the two release tabs on either side of the pickup assembly (callout **3** in Figure 19) and pull the assembly away from the printer. (The left side release tab is partially hidden from view. Pressing in on both sides will release the tabs.)

6. Pull the pickup assembly straight out from the back of the printer.

7. To remove the roller from the pickup assembly, grasp the tabs on the right end of the roller and slide it to the right (shown in Figure 20).

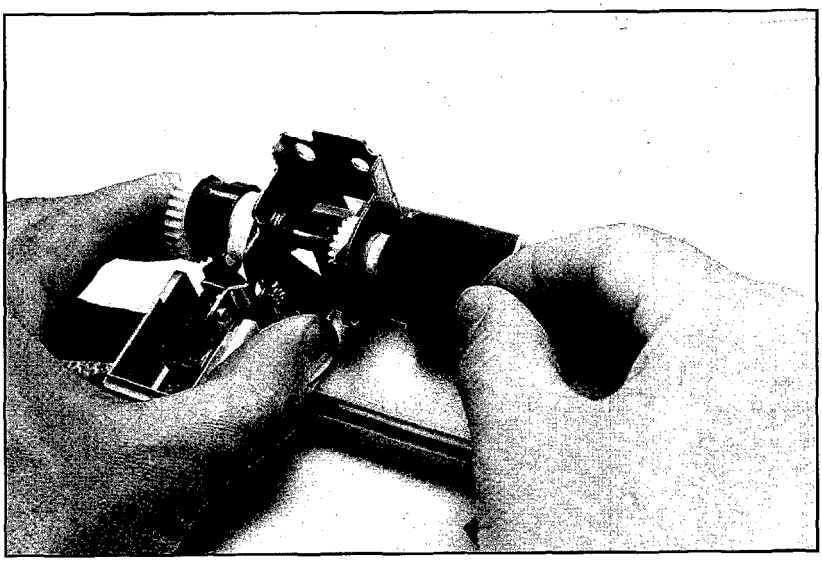


Figure 20 Replacing the Pickup Roller

Replacement Note

When replacing the pickup assembly roller, hold the shaft from the left side so that the pickup roller shaft and gears will remain in place.

Removing the Formatter Board and Shield

1. Remove any installed SIMMs.

Note

There are two TORX screws holding the I/O connector in position (Callout **1** in Figure 21). These are the only two TORX screws in the HP LaserJet 5P printer. Note also the location of the test print button hole (Callout **2**) on the side of the formatter board cover.

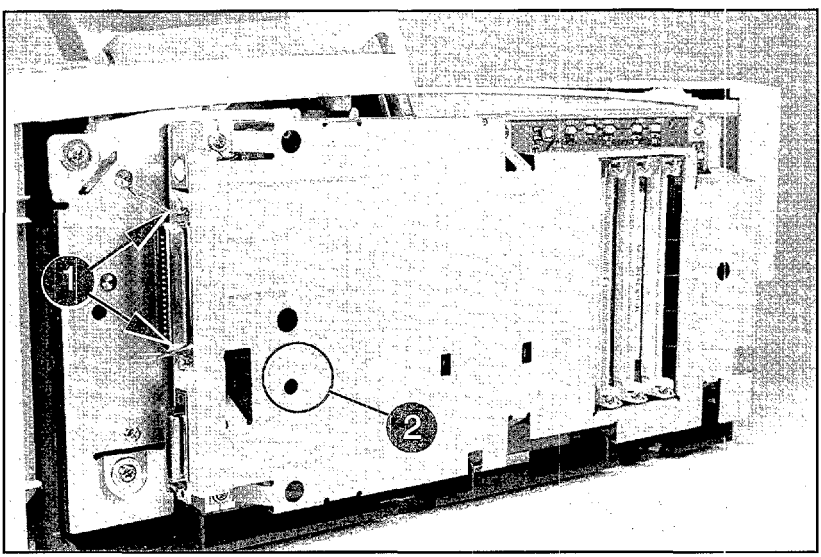


Figure 21 TORX Screw Locations.

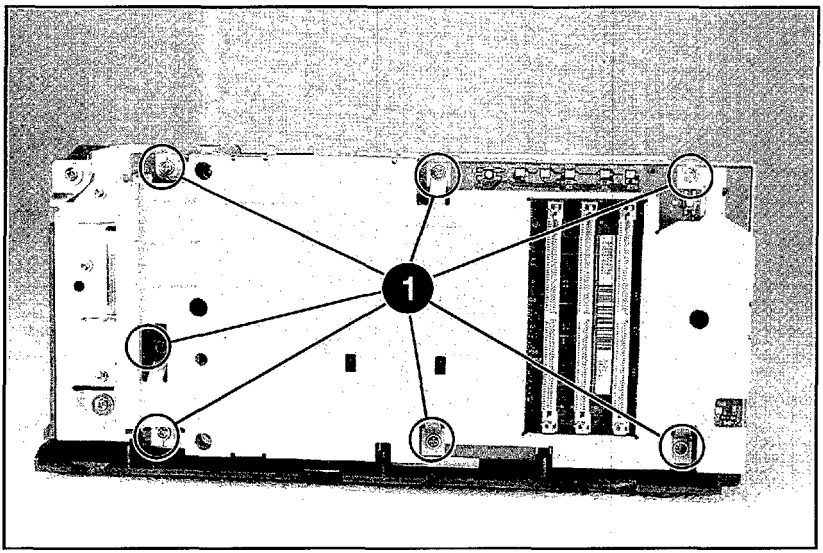


Figure 22 Removing the formatter screws.

2. Remove the (7) screws shown in Figure 22.

3. Pull the formatter board straight from the side of the chassis. (There will be a slight resistance from the DC Controller interconnect.)

4. Pull the DC controller interconnect out (Figure 23).

5. To separate the formatter PCA from its shield, remove the two screws (refer to callout **1** in Figure 21).

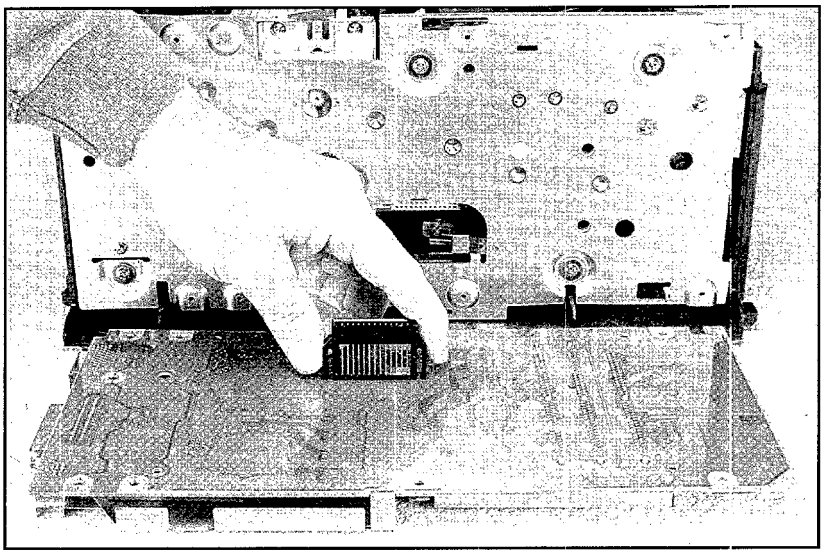


Figure 23 Removing the DC Controller Interconnect.

Note

RETAIN THE DC CONTROLLER INTERCONNECT when replacing the DC Controller Board. The replacement board part number does **not** include this interconnect.

Removing the Fusing Assembly

1. Remove the top cover assemblies.
2. Locate the black plastic fuser cover at the back of the printer. Press the release tab (callout **1** in Figure 24).
3. Slide the cover all the way to the right.
4. Pull the left end of the strip toward you at a 45° angle.
5. Slide the cover to the left and out of the printer.
6. Remove the four screws (2 self-tapping screws, two machine screws with washers) directly below the fuser assembly.
7. Grasp the fuser by the green plastic handle and pull out from the printer.

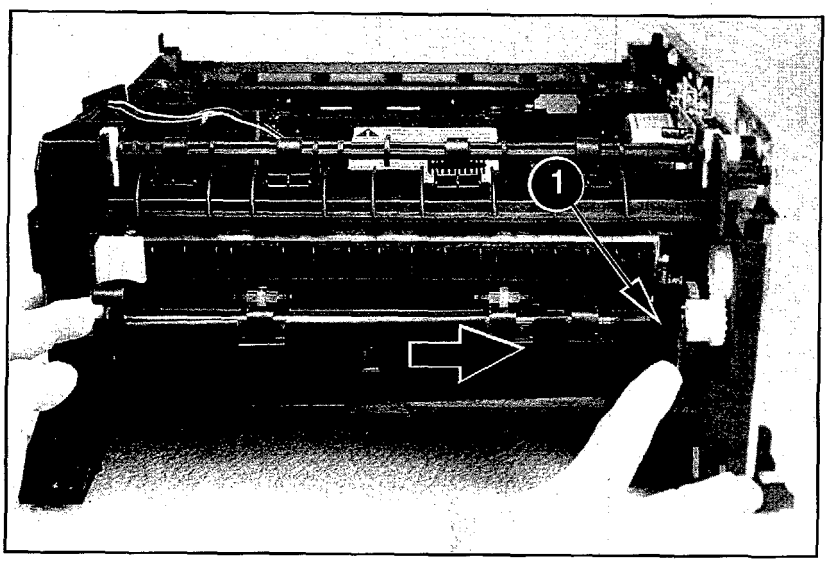


Figure 24 Removing the fuser cover.

Removing the DC Controller Assemblies

The DC Controller Assembly is located on the bottom of the printer. The PCA is protected by a metal shield assembly, and is mounted to a plastic base. The Formatter PCA and Fusing Assemblies are connected directly into the DC Controller and must be removed prior to removal of the DC Controller Assembly.

Caution Failure to remove these components before removing the DC Controller will result in printer damage.

1. Remove the printer covers (page 39), Formatter PCA and Shield (page 48), and Fusing Assemblies (page 50).

2. On the right side, remove the machine screw and washer (Figure 25) holding the grounding spring in place. (Callout **1** in Figure 25).

3. Disconnect the two cables to the tray 1 assembly (callout **2** in Figure 25).

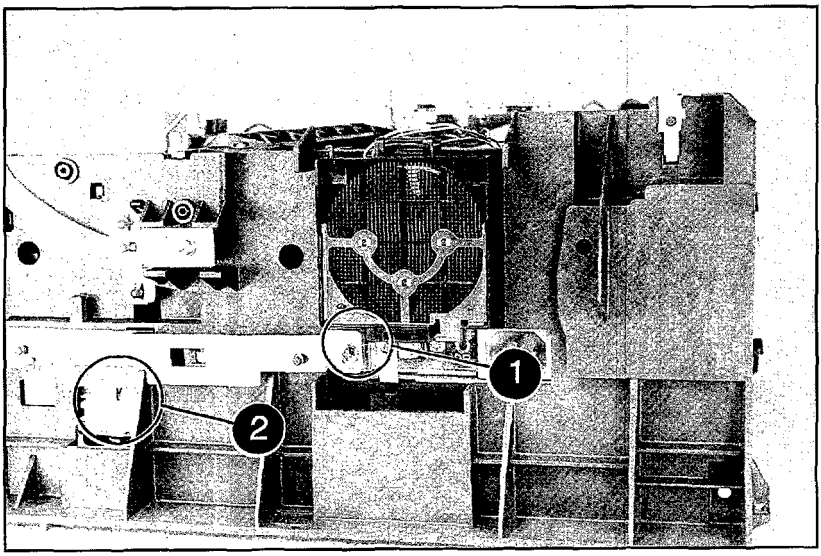


Figure 25 Grounding Spring screw location.

4. On the left side, remove the (2) screws that attach the grounding strap to the Gear Train Assembly (see callout **1** in Figure 6-36 of the Combined Service Manual). Turn the assembly upside-down before proceeding with further steps.

5. Remove the (5) self-tapping screws and the (1) machine screw with star washer from the bottom of the DC Controller Assembly. (See callouts **2** and **3** in Figure 6-36 in the Combined Service Manual.)

6. Lift the DC Controller Assembly away from the printer frame.

Note

The PS1 Input Sensor Arm may come loose and fall out when you remove the DC Controller Assembly. See Figure 6-51 in the Combined Service Manual for re-installation.

7. Remove the metal backing plate from the DC Controller Assembly (see pages 6-43 and 6-44 in the Combined Service Manual for this procedure.)

8. Disconnect Tray 1 Interconnect PCA (callout **2** in Figure 26) and cable 302 (callout **1** in Figure 26) from the DC Controller PCA.

Caution

Remove the Tray 1 Interconnect PCA carefully; it can easily be broken when separating it from the black plastic cover.

Note

The Tray 1 Interconnect PCA and cable must also be retained when replacing the DC Controller Board. The part number for the DC Controller Board does not include a replacement PCA and cable. This cable can be directly pulled from the connector no releases are necessary.

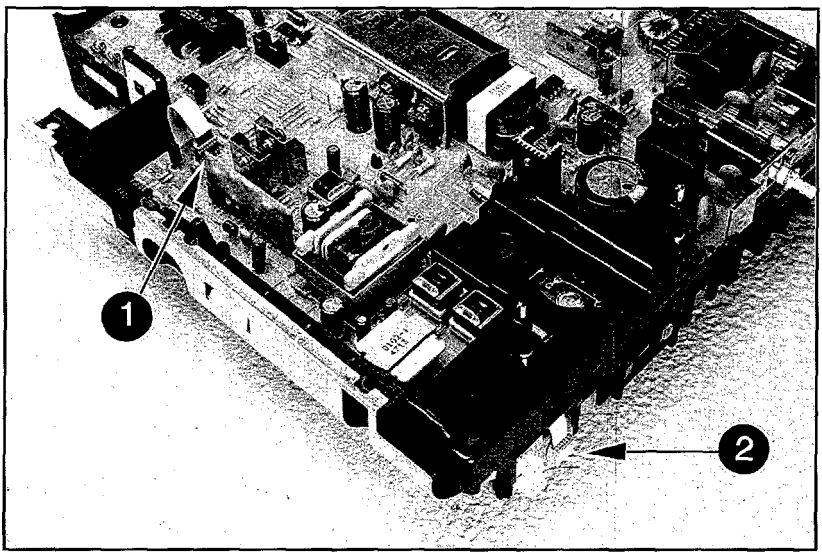


Figure 26 Tray 1 Interconnect PCA and Cable 302

Troubleshooting

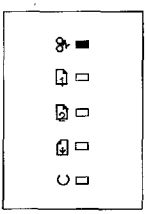
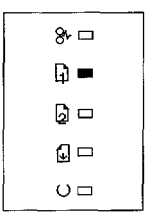
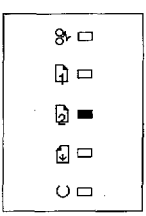
The troubleshooting process for the HP LaserJet 5P/5MP printer has two key differences from the 4L/4ML printer:

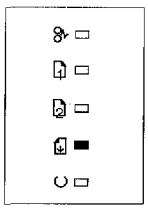
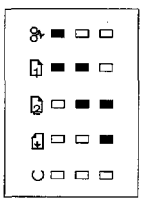
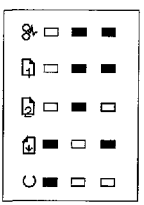
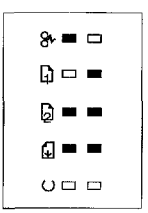
- Different error light patterns (5 LEDs instead of 4).
- Infrared port troubleshooting.

This section provides a list and explanation of the error LED patterns and instructions on troubleshooting the infrared port

Continuable Data Error Light Patterns

Possible data error light patterns are listed in the first column of the following table. If the Error and Data lights on the Status Panel are lit, simultaneously press the GO and RESET buttons on the printer to display a secondary light pattern. This secondary light pattern, or data error light pattern, will more precisely describe the problem. Where more than one data error light pattern is possible, corresponding computer messages are listed in the second column.

Data Error Light Pattern	Computer Message	Description	Recommended Action
	20 MEM OVERFLOW	Too much data, or data too complex.	Turn Page Protection ON or to AUTO (can be set within the Remote Control Panel). 2. Add optional memory. 3. Reduce the complexity of the print job. Press GO to resume printing.
	21 PRINT OVERRUN		
	22 IO ERROR	The computer and printer are not communicating because of improper signal protocols. Indicates a loose cable connection or a bad or poor quality cable.	Reseat the cable and make sure you are using a high-quality cable

Data Error Light Pattern	Computer Message	Description	Recommended Action
	40 ERROR	Indicates an abnormal connection break occurred while transferring data from the computer.	Press GO on the printer to clear the error message.
	41 ERROR	A temporary error occurred while printing. This error most commonly occurs when the printer picks two sheets of paper at once. The page containing the error is reprinted automatically. (first two light sequences)	Remove the page from the output tray and press GO on the printer
	51/52 ERROR	(first and second light sequence)The printer detected a temporary error condition.	Turn the printer off then on. If the problem persists replace the laser scanner assembly.
	55 ERROR	(third light sequence) The printer detected a temporary error condition	Turn the printer off then back on. If problem persists, replace the DC Controller. If the problem still continues, replace the formatter PCA.
	68 SERVICE or 68 READY/SERVICE	The printer's nonvolatile memory (NVRAM) is full.	Press GO on the printer to clear the error message. If problem persists, 1. Perform NVRAM Reset to clear NVRAM (hold down the RESET button for more than 20 seconds during power on. 2. Replace the formatter PCA.

Error 53 -- Memory/SIMM Errors

Error 53 is indicated by a combination of the Error LED and either Tray LED, on and steady. More detail about the error is found by pressing the GO and RESET buttons simultaneously, which causes a secondary sequence of light patterns. These secondary patterns form a binary representation of the exact hardware type, device and error number in the form 53-XY-ZZ as shown in Table 4.

Table 4. Memory Error Codes

X-Hardware Type	Y-Hardware Device	ZZ - Error Number
0: ROM	0: On board RAM/ROM	00: Unsupported memory
1: RAM	1: SIMM slot 1	01: Unrecognized memory
	2: SIMM slot 2	03: Unsupported memory size
	3: SIMM slot 3	04: Invalid SIMM speed
		05: SIMM reporting information incorrectly
		06: SIMM address conflict
		07: SIMM address conflict

Figure 27 explains how to read the light sequences. The initial sequence (Part 1) shows that ERROR 53 can be indicated by two different light sequences, depending on the X value: ROM (x =0) or in RAM (x =1) . Pressing GO and RESET together produces a secondary light pattern, which reveals the Y- and ZZ- values, which complete the error code (Part II) . The binary Y value is read from the top two LEDS; the binary Z value is read from the lower three LEDS. Part III of Figure 27 shows the binary values of the different light combinations.

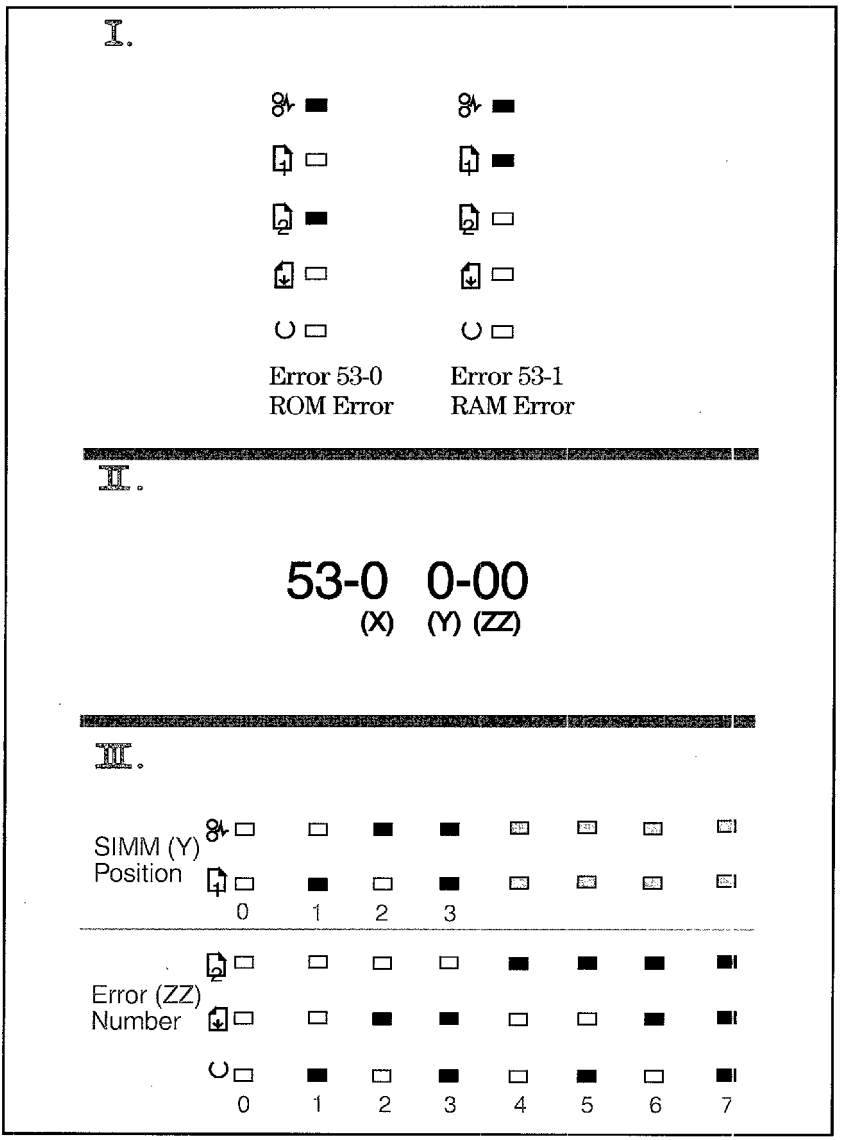


Figure -27 Secondary Light Patterns

Fatal/Service Errors

The following tables show fatal/service errors, which are not continuable; no further operation of the printer will occur until corrective action is taken.

Table 5. Fuser Malfunction

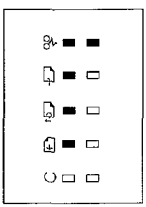
LED Display	ERROR CODE	Description and Recommendation
	50 Fuser Malfunction	1. Remove power to the printer for 10 minutes. If this doesn't clear the error: 2. Perform the Fuser Checks shown in Table C-6. 3. Check the Fuses (FU101 and FU201) on the DC Controller PCA. Replace if faulty. 3. Replace the DC Controller PCA.

Table 6. Fuser Checks

SUSPECTED CAUSE	CHECK
1. Connector Contact	Ensure that J103 and J204 connectors on the Fusing Assembly are seated securely into the DC Controller PCA connectors (see Figure 6-29 in the Combined Service Manual for locations). Reseat the Fusing Assembly.
2. Thermistor wire open.	Remove the Fuser and measure the resistance between connectors J204-1 and J204-2 (see Figure 6-29 in the Combined Service Manual for location). Resistance should read approximately 440 K Ohms at 20 Deg C (room temperature). If the thermistor wire is open, replace the Fusing Assembly.
3. Thermal Fuse.	Measure the continuity between connectors J103-1 and J103-2 on the Fuser (see Figure 6-29, the Combined Service Manual for location). It should be approximately 30±5 Ohms for 100-120 VAC or 127±5 Ohms for 220-245 VAC. If the thermal fuse is open, replace the Fusing Assembly.

Table 7. 57/58 Main Motor Failure

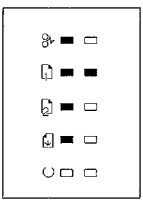
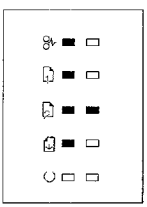
LED Display	ERROR CODE	Description and Recommendation
	57/58 Main Motor Failure	The DC Controller has reported a general motor failure. The Main Motor is controlled by the DC Controller PCA, and seated into connector J601. Power-cycle the printer. If this doesn't clear the message: 1. Does the main motor rotate on power-up? **If no:** a. Reseat the Main Motor into the DC Controller connector. b. Inspect the Gear Train for debris that would block the free operation of the gears. c. The toner cartridge may not be rotating. Refer to "Drum Rotation Functional Check in the Combined Service Manual. d. Main Motor faulty. Power up the printer and observe if stacker rollers rotate. If not, replace the Main Motor. e. Replace the DC Controller PCA. If the main motor **does** rotate: 2. Does the fan turn during printing? If no: a. Power-cycle the printer. b. Check the fan to determine if it is blocked from operation. c. Reseat the fan connector on the Laser/Scanner Assembly. d. Replace the Fan. e. Replace the Laser/Scanner Assembly. f. Replace the DC Controller. g. Replace the connector between the scanner and DC Controller.
		

Table 8. 61.x/62.x SIMM Parity and Memory Errors

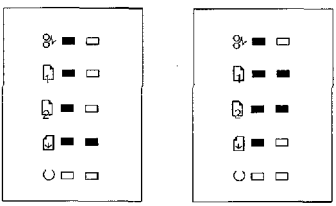
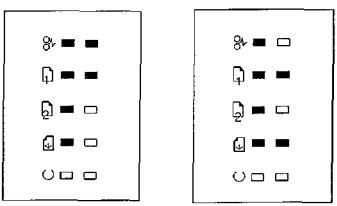
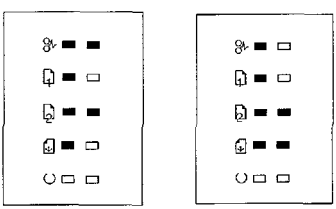
LED Display	ERROR CODE	Description and Recommendation
	61.1 SIMM Slot One Parity Error 62.1 SIMM Slot One Memory Problem	1. Power-cycle the printer. 2. Reseat the SIMM. 3. Replace the SIMM.
	61.2 SIMM Slot Two Parity Error 62.2 SIMM Slot Two Memory Problem	
	61.3 SIMM Slot Three Parity Error 62.3 SIMM Slot Three Memory Problem	

Table 9. 62/63/64 Internal Memory Error

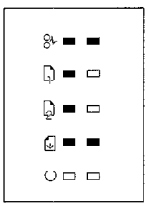
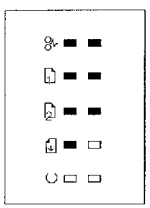
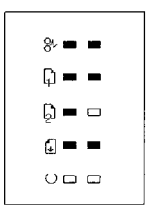
LED Display	ERROR CODE	Description and Recommendation
	62.0 Internal Memory Problem 63 Internal RAM Memory Test Failed 64 Scan Buffer Error	1. Power-cycle the printer. 2. Replace the Formatter PCA.
		
		

Table 10. Video DMA Timeout Error

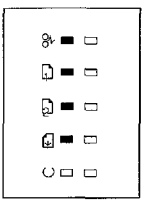
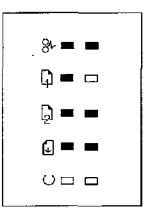
LED Display	ERROR CODE	Description and Recommendation
	64 ERROR: Video DMA Timeout	1. Power-cycle the printer. 2. Replace the Formatter PCA.

Table 11. Dynamic RAM Controller Error

LED Display	ERROR CODE	Description and Recommendation
	65 ERROR: Dynamic RAM Controller	1. Power-cycle the printer. 2. Replace the Formatter PCA.

Infrared Port Not Responding

Situation	Solution
The connection cannot be established or the transmission seems to be taking longer than usual.	Make sure the device you are using is IrDA-compliant; look for an IrDA symbol on the device or refer to the manual for the device for IrDA specifications. Make sure that the operating system on your computer includes an IR driver and your application uses a HP LaserJet 5P/5MP compatible printer driver. Make sure you have positioned the device within the range of operation and that no objects, such as a finger, paper, books, or bright light, are interfering with the connection. Also make sure the two IR ports are clean (free from dirt and grease). Bright light of any kind (sunlight, incandescent light, fluorescent light, or light from an infrared remote control, such as those used for TVs and VCRs) shining directly into one of the IR ports may cause interference. Position the device closer to the IR port on the printer.
The printer prints only part of a page or document.	The connection has been broken during transmission. If you move the portable device during transmission, the connection can be broken. IrDA-compliant devices are designed to recover from temporary connection interruptions. Re-establish the connection (depending on the device you are using, you can have anywhere from 3 to 40 seconds to re-establish the connection).

Situation	Solution
The print job has been properly sent to the printer, but the printer will not print.	If the connection is broken before the entire print job has been transmitted to the printer (printing has not yet started), the printer may not print any of the job. If the Data light is on, press the RESET button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.
The IR status light turns off during transmission.	The connection may have been broken. If the Data light is on, press the RESET button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.

Using the Infrared Test Tool

A special infrared troubleshooting test tool manufactured by Genoa Technology, Inc. in cooperation with Hewlett-Packard is available through HP Direct Ordering (part number 5062-4461). Refer to the discussion beginning on page 22 for more information.

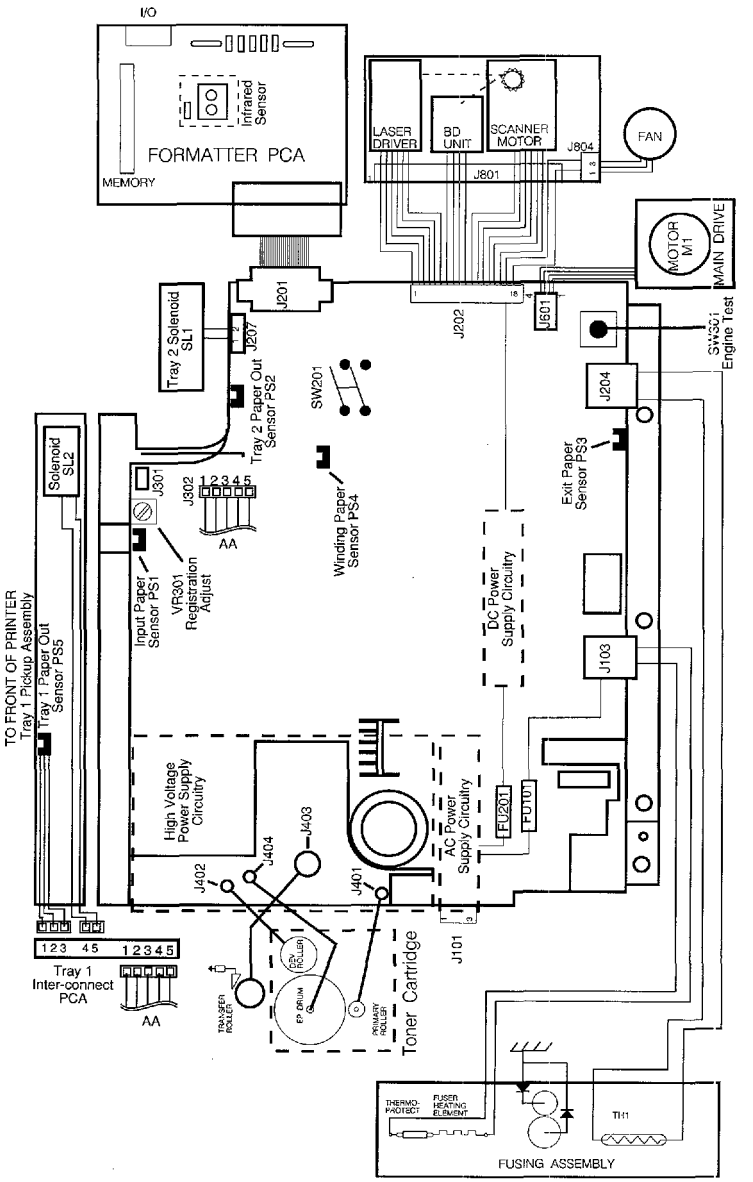


Figure 28 Main Wiring Diagram

Parts and Diagrams

The figures in this section illustrate the major subassemblies in the printer and their component parts. A table (material list) follows each exploded assembly diagram. Each table lists the reference designator (item number) for each part, the associated part number for the item, the quantity, and a description of the part.

While looking for a part number, pay careful attention to the voltage listed in the description column to ensure that the part number selected is for the correct model of printer.

Ordering Parts

All standard part numbers listed are stocked and may be ordered from HP's Parts Direct Ordering, or Parts Center Europe (PCE).

Hewlett-Packard Co.
Support Materials Organization
8050 Foothills Blvd.
Roseville, CA 95678
Parts Direct Ordering: 1-800-227-8164 (U.S. Only)

Hewlett-Packard Co.
Parts Center, Europe
Wolf-Hirth Strasse 33
D-7030 Boeblingen, Germany
(49 7031) 14-2253

Contact your local HP Parts Coordinator for other local phone numbers.

Ordering Consumables

Consumables and accessories such as those listed on page 8-5, and in Table 4-1, Chapter 4, may be ordered direct from Hewlett-Packard. The phone numbers are:

U.S.: 1-800-538-8787
Canada: 1-800-387-3154
(Toronto) 416-671-8383
United Kingdom: 0734-441212
Germany: 0130-3322

Contact your local HP Parts Coordinator for other local phone numbers.

Note Parts that have no reference designator or part number are not field replaceable parts and cannot be ordered through SMO.

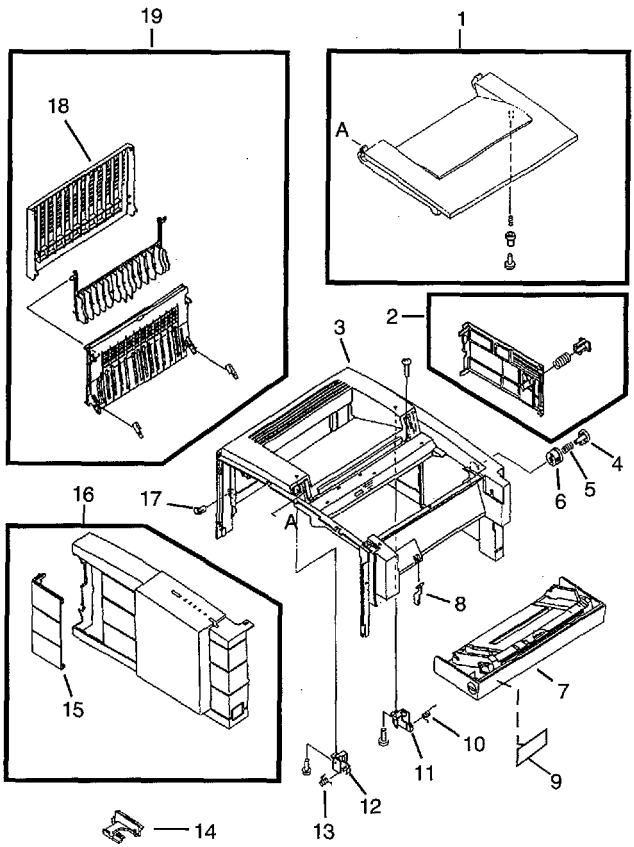


Figure 29. HP LaserJet 5P Covers and Doors

Table 12. Covers and Doors

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1709-000CN	1	Top Door Assembly
2	RG5-1699-000CN	1	Power Connector Cover Assy
3	RB1-5931-000CN	1	Cover, Main
4	RB1-5935-000CN	1	Button, Lock
5	RS5-2228-000CN	1	Spring, Compression
6	RB1-5936-000CN	1	Guide, Lock Button
7	RG5-1697-000CN	1	Paper Feed Tray Assembly
8	RB1-5939-000CN	1	Arm, Tray 1 Sensor
9	C3150-00004 C3155-00001	1	Nameplate (HP LaserJet 5P) Nameplate (HP LaserJet 5MP)
10	RS5-2418-000CN	1	Spring, Torsion
11	RB1-5937-000CN	1	Stopper, Hinge, Right
12	RB1-5938-000CN	1	Stopper, Hinge, Left
13	RS5-2419-000CN	1	Spring, Torsion
14	RF5-0593-000CN	1	Brush, Mirror
15	RB1-5934-000CN	1	Cover, Interface Connector
16	RG5-1710-000CN	1	Side Cover Assembly
17	RB1-5927-000CN	1	Bushing
18	RB1-5924-000CN	1	Tray, Sub-assy, Face-Up
19	RG5-1707-000CN	1	Face-Up Tray Assembly

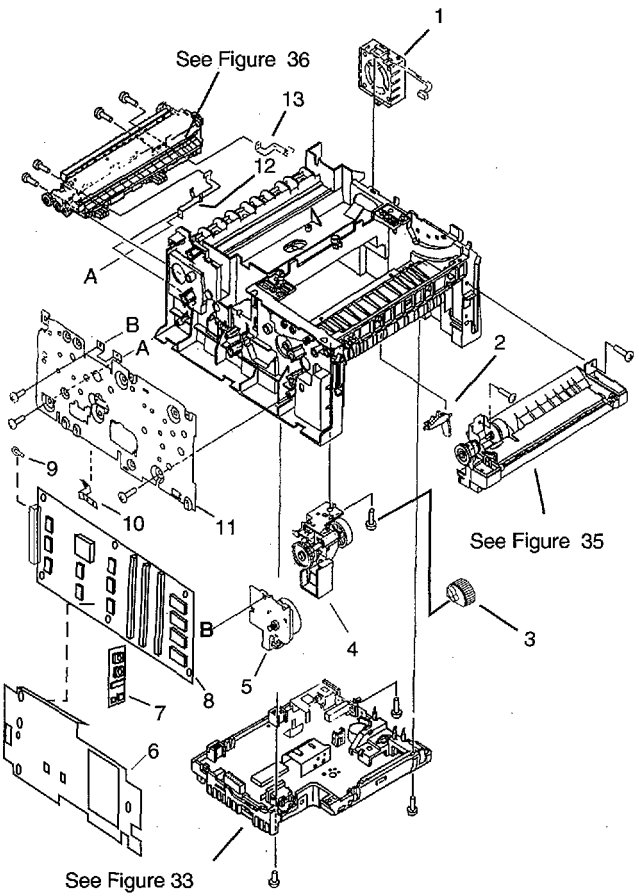


Figure 30. HP LaserJet 5P Internal Components (1)

Table 13. Internal Components (1)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1801-000CN	1	Fan Assembly
2	RB1-6006-000CN	1	Arm, Sensor
3	RB1-6332-000CN	1	Pick-Up Roller (tray 2)
4	RG5-1692-000CN		Pick-Up Assy (tray 2)
5	RG5-1799-000CN	1	Motor Assembly
6	C3150-00005	1	Formatter Shield
7	C3152-69001	1	PostScript SIMM (exch.)
8	C3151-67901 C3151-69001	1	Formatter PCA (new) Formatter PCA (exch.)
9	0515-2701	2	TORX screws
10	RB1-5971-000CN	1	Leaf Spring
11	RG5-1713-000CN	1	Gear train Assembly
12	RB1-5999-000CN	1	Plate, Grounding, Left
13	RB1-5998-000CN	1	Plate, Grounding, Right

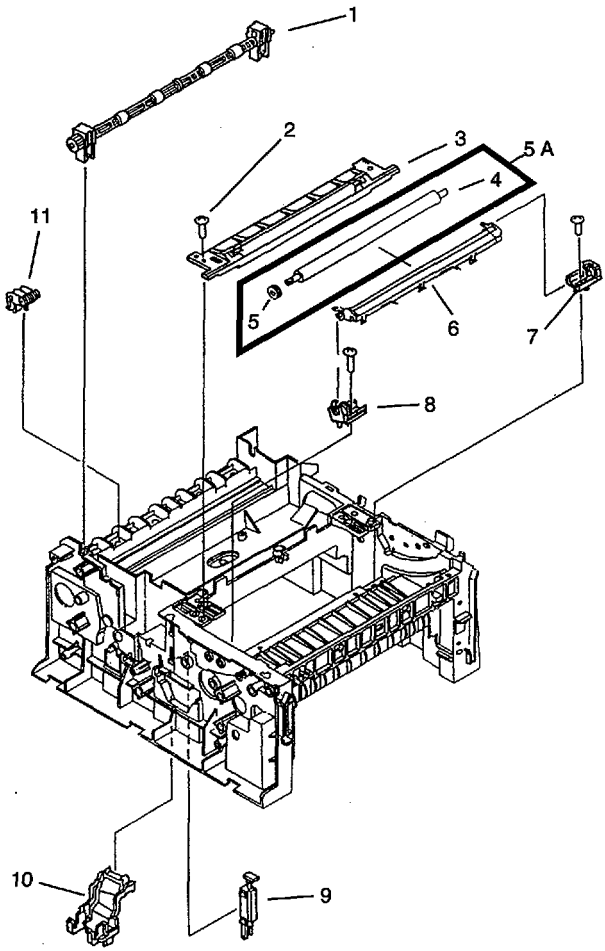


Figure 31. HP LaserJet 5P Internal Components (2)

Table 14. Internal Components (2)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-0683-020CN	1	Roller, Upper Output Assembly
2	XA9-0666-000CN	2	Screw, TP
3	RG5-1786-000CN	1	Mirror Assembly
4	RB1-5873-000CN	1	Roller, Transfer
5	RS5-0313-000CN	1	Gear, 17T
5a	RF5-1287-000CN	1	Transfer Roller Assembly
6	RG5-1706-000CN	1	Transfer Guide Assembly
7	RG5-0675-000CN	1	Transfer Mount Assy, Right
8	RG5-0674-000CN	1	Transfer Mount Assy, Left
9	RG5-0694-020CN	1	Switch, Plunger Assembly
10	RG5-0766-030CN	1	Scanner Connector Assy
11	RG5-0682-030CN	4	Lower Delivery Roller

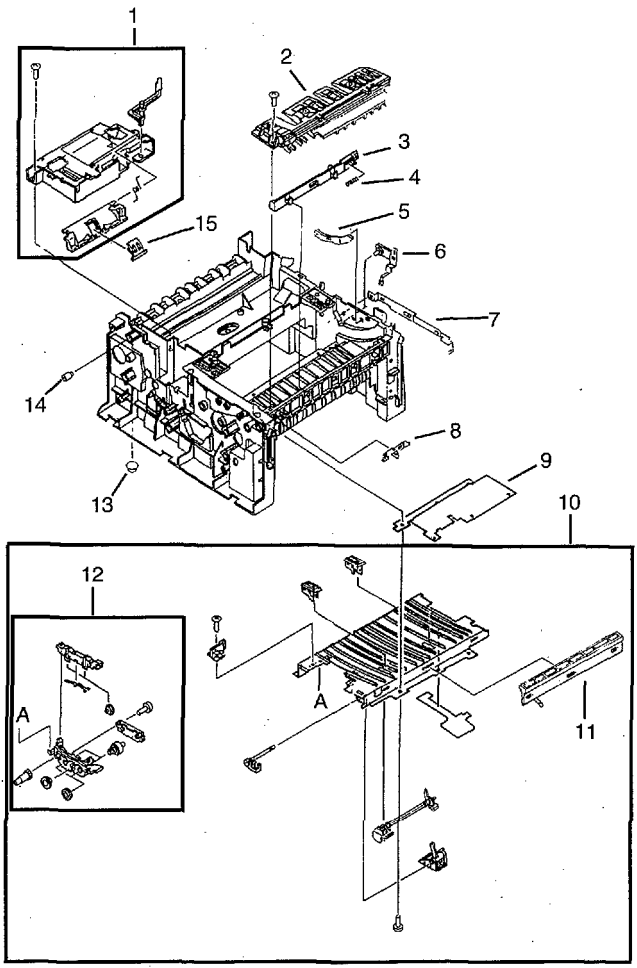


Figure - 32. HP LaserJet 5P Internal Components (3)

Table 15. Internal Components (3)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1780-000CN C3150-69005	1	Laser Scanner Assembly (new) Laser Scanner Assembly (exch.)
2	RG5-1698-000CN	1	Top Oblique Roller Assy
3	RB1-3002-040CN	1	Plunger Lock, Door
4	RS5-2232-000CN	1	Spring, Compression
5	RB1-6003-000CN	1	Plate, Cartridge
6	RB1-6002-000CN	1	Plate, Cartridge Grounding
7	RF5-1286-000CN	1	Plate, MP Grounding, Right
8	RB1-6001-000CN	1	Arm, Input Paper Sensor
9	RB1-2987-020CN	1	Shield, HVT
10	RG5-0584-000CN	1	Feeder Guide Assembly
11	RF5-1283-000CN	1	Eliminator, Static Charge
12	RG5-1814-000CN	1	Roller Assembly, Small Media
13	RB1-6007-000CN	4	Foot, Chassis
14	RB1-6008-000CN	6	Damper, Rubber
15	RB1-3681-000CN	1	Cap, Laser Shutter

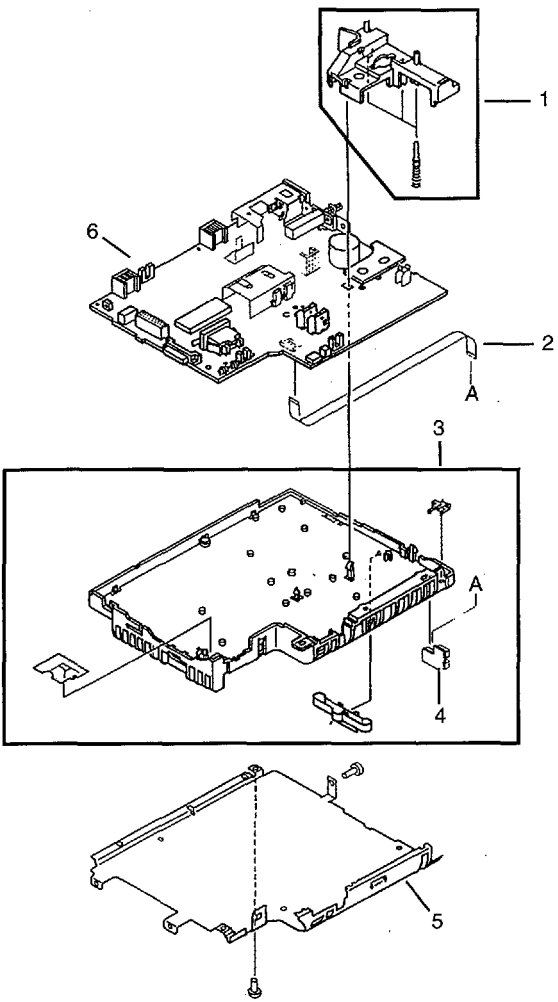


Figure 33. DC Controller Assembly

Table 16. DC Controller Assembly

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1719-000CN	1	HVT Controller Assembly
2	RH2-5259-000CN	1	Cable, Flat
3	RG5-1712-000CN	1	DC Controller Case Assy
4	RG5-1808-000CN	1	Tray 1 Connector PCA Assy
5	RB1-5987-000CN	1	Shield, Case
6	RG5-1798-000CN C3150-69001 RG5-1809-000CN C3150-69002	1	DC Controller PCA (100-120V) (new) (exchange) DC Controller PCA (220-240V) (new) (exchange)

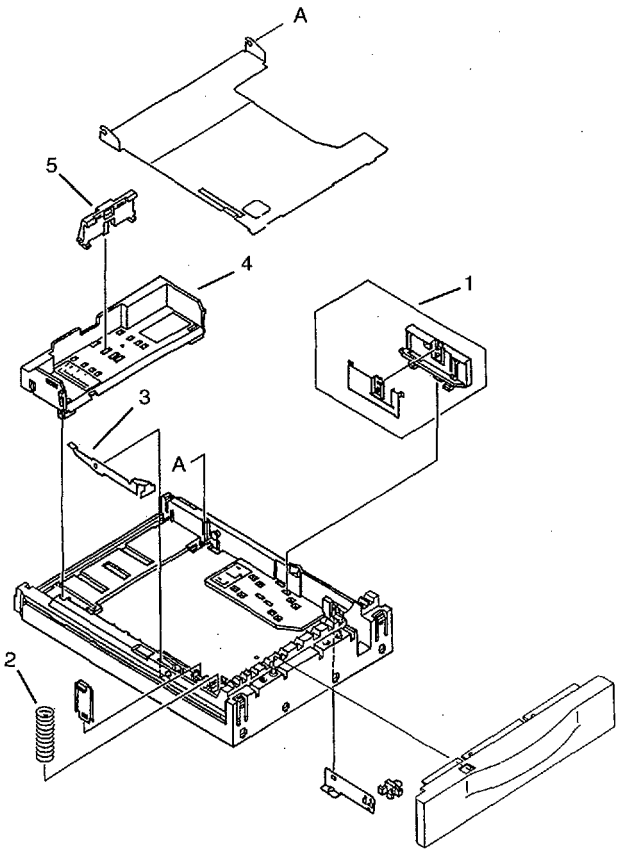


Figure 34. Tray 2 Assembly

Table 17. Tray 2 Assembly

REF	PART NO.	QTY	DESCRIPTION
	R75-4000-000CN	1	Complete Tray 2 Assembly
1	RF5-0673-000CN	1	Plate, Side
2	RS5-2458-000CN	1	Spring, Compression
3	RB1-3426-000CN	1	Claw, Separation
4	RB1-6378-000CN	1	Tray, Legal
5	RB1-3338-000CN	1	Plate, End

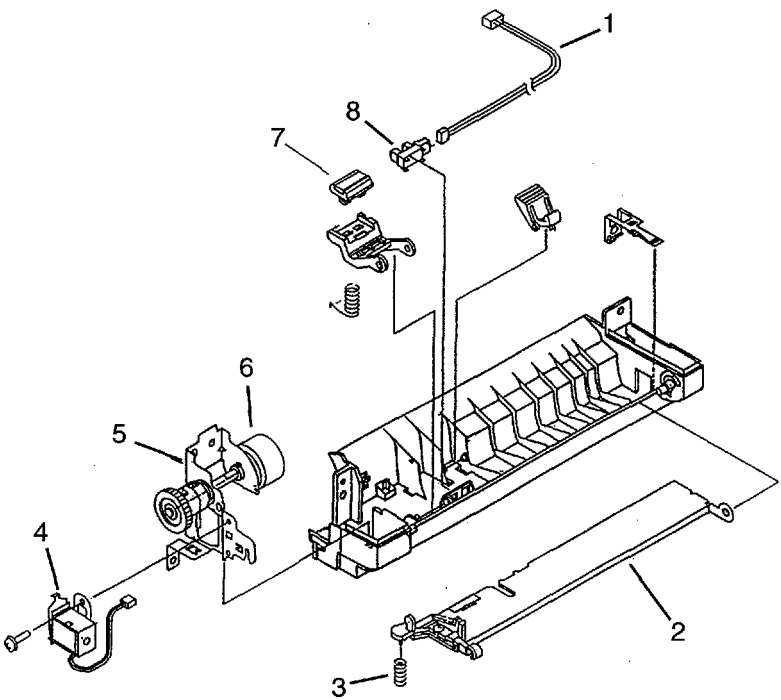


Figure 35. Tray 1 Assembly

Table 18. Tray 1 Assembly

REF	PART NO.	QTY	DESC
	RG5-1695-000CN	1	Complete Tray 1 Pickup Assy
1	RG5-1804-000CN	1	Tray 1 Sensor Cable
2	RG5-1694-000CN	1	Paper guide Plate Assy
3	RS5-2415-000CN	1	Spring, Compression
4	RH7-1258-000CN	1	Solenoid SL2
5	RG5-1693-000CN	1	Tray 1 Pickup Roller Assy
6	RB1-2205-000CN	1	Roller, Tray 1 Pickup
7	RF5-0343-000CN	1	Pad, Separation
8	WG8-5210-000CN	1	Photosensor PS5

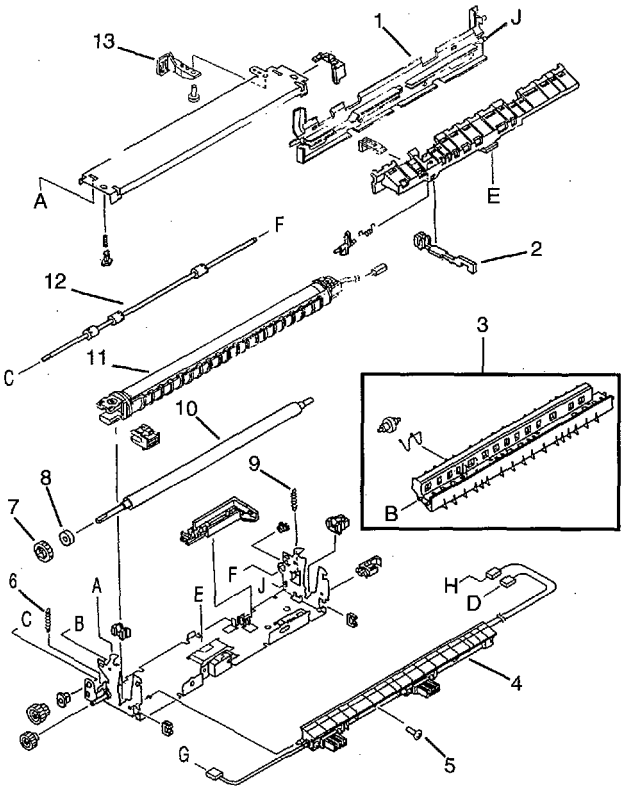


Figure 36. HP LaserJet 5P Fusing Assembly

Table 19. Fusing Assembly

REF	PART NO.	QTY	DESCRIPTION
	RG5-1700-000CN C3150-69003	1	Complete Fuser Assy (100-120V) (new) (exchange)
	RG5-1701-000CN C3150-69004	1	Complete Fuser Assy (220-240V) (new) (exchange)
1	RB1-5918-000CN	1	Cover, Delivery
2	RB1-3097-000CN	1	Flag, Exit Sensor
3	RG5-0681-000CN	1	Fuser Delivery Assembly
4	RG5-1813-000CN	1	Guide , Fuser Entrance
5	XB2-8300-809CN	2	Screw, W/Star, M3X8
6	RS5-2421-000CN	1	Spring, Tension
7	RS5-0637-000CN	1	Gear, 24T
8	RB1-3109-000CN	1	Rubber, Continuity
9	RS5-2421-000CN	1	Spring, Fuser Hook
10	RB1-5910-000CN	1	Roller, Fuser Pressure
11	RG5-1702-000CN RG5-1703-000CN	1	Fuser Film Assembly (100-120v) Fuser Film Assembly (220-240V)
12	RB1-5917-000CN	1	Roller, Fuser Delivery
13	RB1-5906-000CN	1	Tab, Fuser Release

Accessories

Listed below are the accessories and supplies, including supplemental documentation you can order for your HP LaserJet 5P or 5MP printer.

Option	Part Number	Description or Use
Toner Cartridge	C3903A	Replacement toner cartridge.
Memory upgrades	1 MByte—C3130A 2 MByte—C3131A 4 MByte—C3132A 8 MByte—C3133A 16 MByte—C3146A	Adds up to 48 MBytes of memory to the HP LaserJet 5P printer, for a total of 50 MBytes. Adds up to 32 MBytes of memory to the HP LaserJet 5MP printer, for a total of 35 MBytes.
Adobe's PostScript Level 2 SIMM for the HP LaserJet 5P	C3152A	Adds PostScript Level 2 language and 1 MByte of memory to the HP LaserJet 5P printer; includes software for Macintosh, Windows 3.1 and 3.11, and "HP LaserJet 5MP Macintosh Notes" (factory-installed in the 5MP printer).
IEEE-1284 Parallel Cable	2 Meter A to B—C2950A 3 Meter A to B—C2951A 3 Meter A to C—C2946A 10 Meter A to C—C2947A	IEEE-1284-compliant cables, where: A=host computer connector (A-type) B=large printer connector (B-type) C=small printer connector (C-type)
LocalTalk Network cable for Macintosh	92215N	Connect to a LocalTalk Network.
Serial printer cable for Macintosh	92215S	Directly connect to a Macintosh computer.
HP JetDirect EX print servers (external)	J2382B J2383B J2593A J2594A	Ethernet (1 parallel ports) TokenRing (1 parallel ports) Ethernet (3 parallel ports) TokenRing (3 parallel ports)
HP Printer Pal (external)	C2971A	Printer fax accessory. Allows faxes to be printed by the printer; faxes can also be sent electronically from the PC. Availability outside the US may vary.
Extra Paper Cassette (Tray 2)*	R75-4000-000CN	Universal tray.
IrDA Test Tool	5062-4661	Infrared communications test tool manufactured by Genoa Technologies, Inc.

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see "Parts and Diagrams earlier in this appendix.

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C3150A Printer Service Manual Reader's Comment Sheet

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May 1998 Edition

HP LaserJet Family Quick Reference Service Guide

Volume I

HP LaserJet Family Quick Reference Service Guide

Volume I

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Ordering Other Manuals

This *HP LaserJet Family Quick Reference Service Guide* was created to help the LaserJet Service Engineer quickly troubleshoot common printer problems. While this reference is intended to provide all of the information the Service Engineer will need for on-site repair of HP LaserJet products, it is not intended to replace the service manual for any HP LaserJet product. For detailed information about the HP LaserJet products described in this guide, see the user guide or service manual for that product.

Service manuals for HP LaserJet products are available from the HP Support Materials Organization (SMO). The Service Parts Order Desk number is:

(800) 227-8164 (U.S. Only)

If you are located outside of the U.S., contact your local HP Sales and Service office.

Supported Products

This service guide supports the following printers:

Printer Name	Printer Abbreviation
HP LaserJet Companion (minimal support only)	LJ Companion
HP LaserJet 6L	LJ 6L
HP LaserJet 5Si Mopier	LJ 5Si Mopier
HP LaserJet 5Si/5Si MX	LJ 5Si LJ 5Si MX
HPLaserJet 5L	LJ 5L
HP LaserJet 6P/6MP	LJ 6P LJ 6MP
HP LaserJet 5P/5MP	LJ 5P LJ 5MP
HP LaserJet 5/5M/5N	LJ 5 LJ 5M LJ 5N
HP LaserJet 4V/4MV	LJ 4V LJ 4MV
HP LaserJet 4P/4MP	LJ 4P LJ 4MP
HP LaserJet 4L/4ML	LJ 4L LJ 4ML
HP LaserJet 4+/4M+	LJ 4+ LJ 4M+
HP LaserJet 4/4M	LJ 4 LJ 4M
HP LaserJet 4Si/4Si MX	LJ 4Si LJ 4Si MX
HP LaserJet IIISi	LJ IIISi
HP LaserJet IIIP	LJ IIIP
HP LaserJet IIP+	LJ IIP+
HP LaserJet IIP	LJ IIP
HP LaserJet IIID	LJ IIID
HP LaserJet III	LJ III
HP LaserJet IID	LJ IID
HP LaserJet II	LJ II
HP Classic LaserJet (2686D)	LJ 2686D
HP Classic LaserJet (2686A)	LJ 2686A

Note

The abbreviation for each printer name is used in the text.

.

Reference Name Used in this Guide	Model Number	Maximum Pages per Month	Service Manual Part Number
LJ 6L	C3990A	6K	C3990-99001
5Si Mopier, LJ5Si MX/5Si*	C3166A/C3167A C4076A/C4077A	100K	C4077-99015
LJ 5L	C3941A	4K	C3990-99001
LJ 6P/6MP* 5P/5MP*	C3150A/C3155A/ C3980A/C3982A	12K	C3980-99001
LJ 5/5M*/5N	C3916A/C3917A/ C3952A	35K	C3916-90984
LJ 4V/4MV	C3141A/C3142A	50K	C3141-90929
LJ 4P/4MP*	C2005A/C2040A	8K	C3980-90956
LJ 4L/4ML*	C2003A/C2015A	8K	C3980-90956
LJ 4+/4M+*	C2037A/C2039A	20K	C3916-90984
LJ 4/4M*	C2001A/C2021A	20K	C3916-90984
LJ 4Si/4SiMX*	C2010A/C2011A	75K	C2010-90939
LJ IIISi	33491	50K	C2010-90939
LJ IIIP	33481	8K	33481-90951
LJ IIP+	C2007A	8K	33481-90951
LJ IIP	33471	6K	33481-90951
LJ IIID	33459	20K	33459-90906
LJ III	33449	16K	33449-90906
LJ IID	33447	16K	33459-90906
LJ II	33440	12K	33449-90906
Classic LJ 2686D	2686D	15K	02686-90920
Classic LJ 2686A	2686A - 2686A+	12K	02686-90920

*Macintosh-compatible

1 Control panel messages

Overview

This chapter provides information on the display lights on the HP LaserJet 6L, 5L, 6P, 5P, and 4L printers and includes illustrations and detailed error codes for all printers. Error codes are listed as they appear on the printer display. Not all codes are included as many are self-explanatory.

Note

Displays shaded in color represent primary lights. Displays that are not shaded represent secondary lights. To view the secondary lights on the printer, press **Go** and **Reset/Job Cancel** simultaneously.

LJ 6L, 5L Printer Light-Emitting Diode (LED) Displays

See the legend that follows for a description of the error and the action to remedy it.

STATUS MESSAGES



1. Error LED is on. (*Unclearable error)



2. Error LED is blinking.



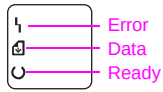
3. All LEDs are blinking.



4. Data LED is blinking.



5. All LEDs are off.





When all the lights are on, there is a Service error. Press and hold the front panel button to display the LED error code pattern. The code will be shown only while the button is pressed. The following pictures show the possible LED error patterns.



1. Error LED is on. (*Unclearable error)



2. Ready LED is on.



3. Error and Ready LEDs are on.



4. Error and Data LEDs are on.



5. Data LED is on.



6. All LEDs are on.



7. Data and Ready LEDs are blinking.



8. Formatter error.

* An unclearable error is not strictly a service message. It will appear without all three lights being displayed first. See item 1 in the following table.

Legend (6L, 5L Display Lights)

Status Messages

Item	Description	Recommended Action
1	Paper out Door open No Electro-photographic (EP) cartridge Paper jam	See page 21 See page 18 See page 32 See page 26
2	Memory error	See page 34
3	Incompatible memory card	See page 49
4	Manual feed	See page 70
5	Sleep mode	See page 69

Error and Service Messages

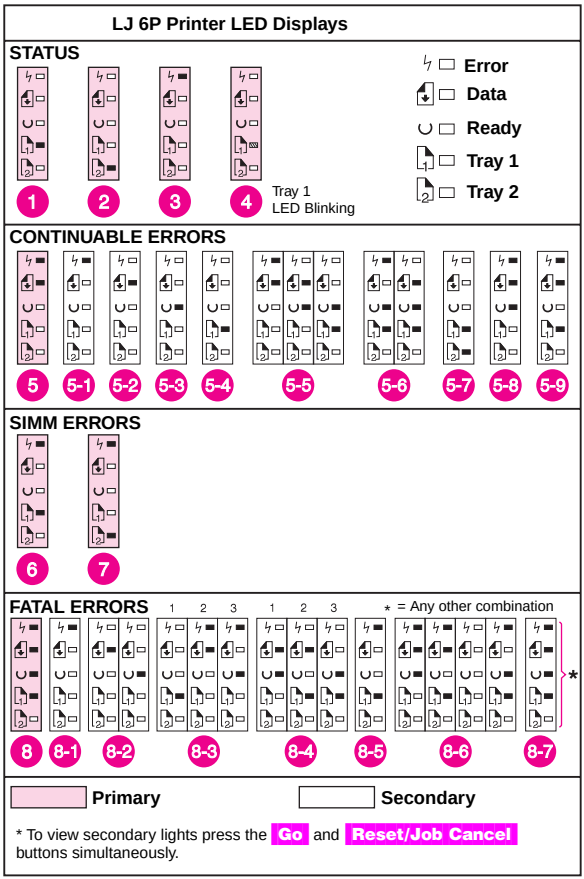
Item	Description	Recommended Action
1	Unclearable error Engine error	See item 1, above See page 39
2	ROM/RAM error	See page 50
3	Fuser error	See page 44
4	Beam error	See page 45
5	Scanner error	See page 47
6	Formatter PCA error	See page 57
7	Firmware error	See page 61
8	Formatter PCA error	See page 57

Note

Before troubleshooting any service error, power cycle the printer to see if the error persists.

LJ 6P Printer LED Displays

See the legend that follows for a description of the error and the action to remedy it. If both the error and data lights are lit, simultaneously press **Go** and **Reset/Job Cancel** to display the Data Error pattern.



Legend (6P Display Lights)

Status Messages

Item	Description	Recommended Action
1	Paper out (Tray 1)	See page 21
2	Paper out (Tray 2)	See page 21
3	Printer open No toner cartridge Paper jam	See page 18 See page 32 See page 20
4	Manual feed	See page 70

Continuable Errors

When the ERROR and DATA LEDs are on, press **Go** and **Reset** simultaneously. Follow the instructions for the secondary light patterns shown.

Item	Description	Recommended Action
5	Primary light pattern	See note on primary and secondary lights, page 13
5-1	Error 20 (memory overflow)	See page 34
5-2	Error 21 (print overrun)	See page 35
5-3	Error 22 (I/O error)	See page 36
5-4	Error 40	See page 38
5-5	Error 41.1, 41.2, 41.3	See page 40
5-6	Error 68, 68.1	See page 64
5-7	Error 51 (beam detect)	See page 45
5-8	Error 52 (scanner malfunction)	See page 47
5-9	Error 55	See page 53

SIMM Errors

Remove all SIMMs and power cycle the printer. Retry the operation. Replace the SIMMs one at a time to locate the defective module. Refer to the Service Manual for details.

Item	Description	Recommended Action
6	Error 53-0 ROM error	See note below
7	Error 53-1 RAM error	See note below

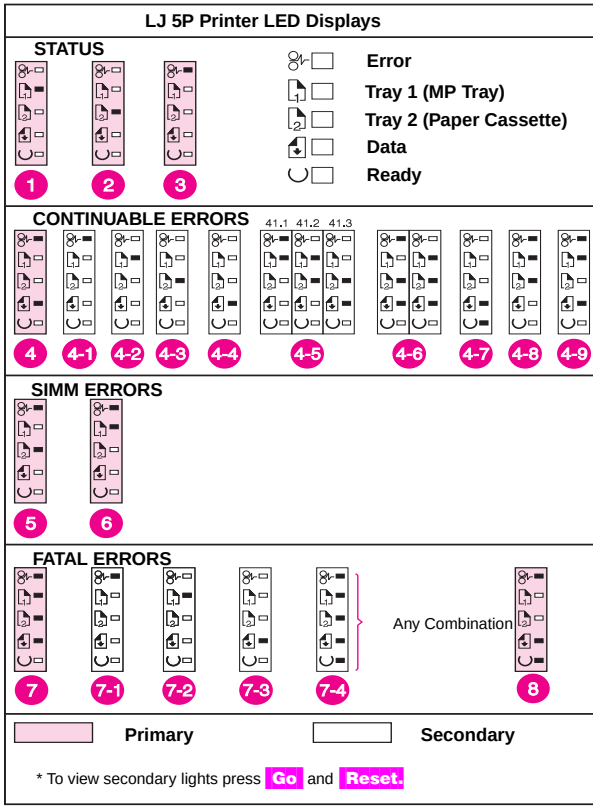
Fatal Errors

When the DATA, TRAY 2, TRAY 1, and ERROR LEDs are on, press **Go** and **Reset** simultaneously and follow the instructions for the secondary light patterns shown.

Item	Description	Recommended Action
8	Primary light pattern	See note on primary and secondary lights, page 13
8-1	Error 50 fuser	See page 44
8-2	Error 57/58 (main motor)	See page 54
8-3	Error 61.x (x=1, 2, 3 SIMM)	See page 58
8-4	Error 62.x (x=1, 2, 3 SIMM)	See page 59
8-5	Error 62.0	See page 58
8-6	Error 63, 64, 64, 65	See pages 59–60
8-7	All other errors	See pages 61–72

LJ 5P Printer LED Displays

See the legend that follows for a description of the error and the action to remedy it. If both the error and data lights are lit, simultaneously press **Go** and **Reset** to display the Data Error pattern.



Legend (5P Display Lights)

Status Messages

Item	Description	Recommended Action
1	Paper out (Tray 1)	See page 21
2	Paper out (Tray 2)	See page 21
3	Printer open No toner cartridge Paper jam	See page 18 See page 32 See page 20

Continuable Errors

When the ERROR and DATA LEDs are on, press **Go** and **Reset** simultaneously. Follow the instructions for the secondary light patterns shown.

Item	Description	Recommended Action
4	Primary light pattern	See note on primary and secondary lights, page 13
4-1	Error 20 (memory overflow)	See page 34
4-2	Error 21 (print overrun)	See page 35
4-3	Error 22 (I/O error)	See page 36
4-4	Error 40	See page 38
4-5	Error 41.1, 41.2, 41.3	See page 40
4-6	Error 68, 68.1	See page 64
4-7	Error 51 (beam detect)	See page 45
4-8	Error 52 (scanner malfunction)	See page 47
4-9	Error 55	See page 53

SIMM Errors

Item	Description	Recommended Action
5	Error 53-0 ROM error	See note below
6	Error 53-1 RAM error	See note below

Note

Remove all SIMMs and power cycle the printer. Retry the operation. Replace the SIMMs one at a time to locate the defective module. Refer to the Service Manual for details.

Fatal Errors

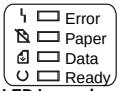
When the DATA, TRAY 2, TRAY 1, and ERROR LEDs are on, press **Go** and **Reset** simultaneously. Follow the instructions for the secondary light patterns shown.

Item	Description	Recommended Action
7	Primary light pattern	See note on primary and secondary lights, page 13
7-1	Error 50 fuser	See page 44
7-2	Error 57/58 (main motor)	See page 54
7-3	Error 61.1/62.1	See page 58
7-4	All other errors	See 79 Error, pages 61-71
8	Error 63 service error	See page 59

LJ 4L Printer LED Displays

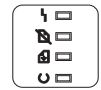
Recoverable Errors

For more details, see the page number provided.



LED Legend

RECOVERABLE ERRORS (Displayed on single lights)

Paper Out (See page 23)	Printer Open (See page 24)	Paper Jam (See page 26)	21 Print Overrun (See page 35)
			
Paper LED on steady.	Error LED on steady.	Paper LED is blinking.	Error LED is blinking.

SERVICE ERRORS (Displayed while pressing front panel button)

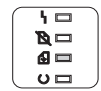
Service Error

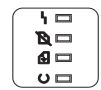


All 4 LEDs are on.

When all four lights are on, a service error is indicated. Press and hold the front panel button to display the error code. The code will be shown only while the button is pressed. The following pictures show the possible error codes.

NOTE: If all four lights remain on, yet no error code is displayed when pressing the button, power cycle the printer. If the condition persists, replace the formatter PCA.

50 Error/Service (See page 42)	51 Loss of Beam Detect (See page 45)	52 Incorrect Scanner Speed (See page 47)	53 Accessory Memory Error (See page 49)
			
Ready and Error LEDs are on.	Data and Error LEDs are on.	Paper and error LEDs are on.	Data LED is on.

55 Engine (See page 53)	58 Fan (See page 56	61.x Formatter (See page 58)	Blank Display (See page 68
			
Error LED is on.	Ready, Data, and Error LEDs are on.	Error LED is off; other LEDs display a pattern.	All LEDs are off.

4L-Specific Error Configurations

Priority of Errors

Each error has a priority in relation to the others. If more than one error condition occurs at the same time, the highest priority error will be displayed. The priority of errors is as follows:

Service Errors

1 Formatter PCA

2 RAM

3 Engine

4 Scanner

5 Beam

6 Fan

Recoverable Errors

1 Door Open/No Toner Cartridge

2 Paper Jam

3 Paper Out

4 Memory Error

5 Manual Feed

Note

Before troubleshooting any Service error, power cycle the printer to see if the error persists.

Error Codes

Clear Staple Jam

5Si Mopier

- Clear the jam.
- Check the staple cartridge.
- Check the stapler and cabling.
- Check the stapling unit control's printed-circuit assembly (PCA).
- Replace the entire stapling unit as required.

Close Printer Cover/Printer Open

All Printers

- The printer door is open.
- Check that the toner cartridge is fully seated and that the covers are firmly closed.
- The direct current (DC) power supply is defective.
- The DC controller is defective.
- The actuator or tab is missing or broken.
- The paper control printed-circuit assembly (PCA) is defective.

Install Toner Cartridge/No Cartridge

All Printers

- Reseat or install a new toner cartridge.
- The high voltage contacts are dirty or defective.
- The high voltage power supply is defective.

LJ 5

- The DC Controller is defective.

Install Tray 2

LJ 5

- The lower cassette (Tray 3) is selected and the printer has detected that the paper cassette (Tray 2) is not installed.
  – Install or reseat the paper cassette (Tray 2), which is the paper guide for the lower cassette (Tray 3).
- The paper cassette (PC) is improperly fitted.
  – Firmly reseat the PC.

Out of Staples Optional Output X

5Si Mopier

- Replace the staple cartridge.
  – If the message continues after the cartridge has been replaced, check the stapler, top cover assembly, and cabling.
- Check the stapling unit control PCA.
- Replace the entire stapling unit if required.

Output Operation Condition x.yy

5Si Mopier

x=output device number
yy=condition code
For the multibin mailbox:
01 = face-up tray not installed

Note

See also the section on troubleshooting the 2,000-sheet input unit and multibin mailbox/mailbox with stapler.

Remove Paper Jam

LJ 5

- See 13 Paper Jam—all printers
- The rear door is open.
- The cassette paper out sensor flag is broken or missing.
- The 500-sheet lower cassette is not properly adjusted (see service note C2001A-04).
  - Adjust the tray, using the instructions in the service note.
- Check the transfer roller to ensure that it is properly seated.
- The input sensor (PS1) or fuser exit sensor (PS3) is bad; or with jams from the MP tray (Tray 1), the paper end sensor (PS5) is bad.

Staple Limit Reached

5Si Mopier

- Send print jobs of only 20 pages or fewer to the stapler.

Stapler Align Error

5Si Mopier

- Remove the paper from the stapler and re-send the job.

Stapler Malfunction

5Si Mopier

- Clear the stapler jam and re-send the job.

Stapler Supply Out

5Si Mopier

- Load a new staple cartridge.

Toner Low

5Si, 5

- The toner is uneven in the cartridge.
- The toner cartridge contact points are malfunctioning.
- The high-voltage power supply (HVPS) is defective.

Tray x Empty/x Load/Paper Out

All Printers

- The paper tray is empty or is seated incorrectly.
- The sensor arm is stuck or broken.
- The tray-size sensor is defective or configured incorrectly.
  - Verify the tray tabs and switches at the right rear (or right front) of the tray slot, or configure the tray from the control panel.
  - The paper control/sensor PCA is defective.

Warming Up

5Si, 5

- Separate all accessories.
- Power cycle the printer.
- The formatter PCA is defective.
- The DC controller is defective.
- The power supply is defective.

02 Warming Up (if 3 Minutes)—See also 50 Error

4V

- The Input/Output (I/O) cable is hooked up incorrectly or there is bad I/O in the computer.
  - Remove the I/O cables and power cycle the printer.
- There are defective component(s).
  - Replace the fusing assembly if it is not warming up the DC controller, PCA power supply, or formatter PCA.

4Si/IIISi

- The display cable or formatter PCA is defective.

IID, II

- The I/O cable is hooked up incorrectly or there is bad I/O in the computer.
  - Remove the I/O cables. Replace the formatter PCA.

2686A/D

- The DC power supply/main motor drive is defective.

11 Paper Out (MP/PC/UC/LC/EC/LE LOAD)

All Printers

- The paper tray is empty or is seated incorrectly.
- The sensor arm is stuck or broken.
- The tray-size sensing or configuration is defective.
  - Verify the tray tabs and switches are at the right rear (or right front) of the tray slot, or configure the tray from the control panel.
- The paper control/sensor PCA is defective.

4L

- The paper cassette is empty or missing.
- The paper cassette is seated incorrectly.
- The paper out flag PS2 is broken or stuck.
- The DC controller PCA is defective.
- Tray 1 (the MP tray) is empty.
  - Add paper to Tray 1; then press **Go** to continue.
- Tray 2 (the paper cassette) is empty.
  - Add paper to the tray if it is on continuously; verify that the sensor flag movement is not hindered.

12 Printer Open

All Printers (Exceptions: 4P, IIIP, IIP Plus, IIP)

- The printer door is open.
  - Check that the toner cartridge is fully seated and that the cover is firmly closed.
- A DC power supply malfunction or DC controller malfunction occurred.
- Tab is missing on the top cover; replace the tab.

4V

- Check the front Door Open sensor flag sensor; it could be broken or stuck.
  - PS402 is located on the small Front Door Unit Terminal PCA, on the front door under the transfer roller.
- A toner cartridge microswitch malfunction has occurred.
  - Check the toner cartridge microswitch (SW501) on the high voltage PCA.
- A DC controller PCA malfunction has occurred.

4 Plus, 4

- The plunger is missing on the top cover.
- A paper control PCA malfunction has occurred.

4Si, IIISi

- A PS1 malfunction has occurred.
  - Check that the PS1 is blocked by the latch flag. Replace the PS1 if it is defective.
- The fuser bulb has burned out.
  - Check to see if the fuser bulb turns on. If the fuser bulb does not turn on, reset SW101 on the AC power supply.
- A DC controller PCA malfunction has occurred.

12 Open or No EP

4P

- The top cover is open.
- The toner cartridge is not installed.
- There is a defective interlock switch assembly.

4L

- Part of the top door that pushes the plunger down is broken.
- The top door switch (plunger assembly) is broken.

IIIP, IIP Plus, IIP

- The paper path door or top cover is open.
  - Close the paper path door or top cover.
- A toner cartridge is not installed or it is not seated.
  - Replace or reseat the toner cartridge.
- There is a defective fan, PS4, or PS5.
- The external fuser access door is not closed.

13 Paper Jam/Remove Paper Jam

All Printers

- The media does not meet HP specifications.
- The paper path is dirty or obstructed.
  - Clean the paper path components; ensure that the transfer roller is seated properly.
- The pickup (or other) rollers and/or the separation pad is worn.
- The paper is the wrong length or the paper size is selected incorrectly in the software.
- The exit sensor or flag is defective.
- A defective input (paper-out) sensor does not sense that the printer is out of paper.
- The paper cassettes are not correctly loaded.
- The solenoid operation is bad.
  - Verify proper solenoid operation and replace if necessary.
- The gear(s) is bad or not meshing in the drive train.
  - Replace the bad gear(s) or check the toner cartridge gears for damage.
- The main motor or drive circuit is bad.
- The delivery mechanism or the coupler gear to the main drive is bad.
- The main motor drive circuitry is bad.
- The DC controller is defective.

5L, 6P, 5P

- If all of the flags move properly and the connectors are seated, but the error persists, replace the DC controller.

6P, 5P

- There are paper fragments under the oblique rollers (top or front).
  - Remove the rollers and the paper fragments.

4V

- The toner cartridge gears are worn or damaged.
- The paper path gears are worn or damaged.
- The DC controller PCA is defective.
- The registration guide is defective.

4P, 4L

- The rear door of the printer is open.
- The flags/sensors are stuck or broken.
- There are paper fragments under the oblique rollers (top or front).
  - Remove the rollers and clear out the paper.
- The transfer roller guide is not seated.

4 Plus, 4

- The rear door is open.
- The cassette paper-out sensor flag is broken or missing.
- The 500-sheet lower cassette is improperly adjusted (see service note C2001A-01A).
  - Adjust the tray according to the service note instructions.
- The transfer roller is seated improperly.
- There is a bad input sensor (PS1) or fuser exit sensor (PS3); or with jams from the MP tray (Tray 1), a bad paper-end sensor (PS5).
- The output rollers (service note C2001A-03A) are defective.

IIID, III, IID, II

- The registration assembly is defective.
- The fuser is defective.

IIID, IID

- The duplex paper path is obstructed or contains worn components.
- The switchback assembly is misadjusted or bent.

III, II

- The sensor cable is defective.
  - Replace the fuser to the DC controller cable (RG1-0907-000CN).

2686D/A

- The separation belt is broken.
- The transfer guide assembly is defective.
- The paper pickup clutch is turning more than once.
  - Disassemble the clutch and re-grease. **NOTE**: If one clutch needs re-greasing, it is likely that they all do.
- The registration shutter is stuck.
- The rear paper guide door is worn.
  - Replace the worn paper rollers or readjust the rear door.
- The front paper guide door is worn or misadjusted, preventing paper from getting to the registration assembly on time.
  - Readjust the front paper guide door.

13.1 Internal, 13.2 Input, 13.3 Duplex, 13.4 Output

4Si, IIISi

- Media is not picked up, or media is jammed in the printer.
  - Check and clean the entire paper path.
- Media is in the duplex unit.
  - Check the paper input path and paper re-feed from the sensor PS2 duplex unit.
- A sensor malfunction has occurred.
  - Check the PS4 or PS5 in the duplex or switchback, respectively.
- An output sensor malfunction has occurred.
  - Check the PS7 in the output area Optional Power Stacker.
- Check the registration area: fuser-exit sensor flag and sensor.
  - Install a user maintenance kit (110 V - C2062A, 220 V - C2087A).

13.x Paper Jam

5Si

Note

When troubleshooting the LJ 5Si, always troubleshoot the error log message. See the LJ 5Si service manual for detailed error log information.

X=Location of jam

0=Non-specific jam

1=Paper feed/paper late jam—paper late arriving at PS 2, which is located in the paper pickup unit. Inspect the paper path. Verify flag movement.

2=Paper feed/paper late jam—paper late arriving at PS 2, which is the registration photo sensor. Remove the toner cartridge and lift up the green lever to access the sensor flag. Verify flag movement.

3=Fuser output paper late jam—paper late arriving at PS 1403, which is in the fusing assembly. Verify flag movement.

4=Fuser output, paper jam.

5, 6=Duplex module paper jam. PS 1402 face-down delivery photo sensor is located in the face-down delivery assembly. Inspect the diverter drive assembly. Verify that the paper path from the fuser to the top of the face-down bin is clear and that the flag moves freely.

7-10=Duplex module paper jam. The paper is diverted to the duplex module after leaving the fusing assembly. The paper is turned around in the duplexer and re-fed into the printer's paper path. Reset the duplex module. If the problems persist, replace the complete duplex assembly.

11=External input device paper jam
If the control panel displays a 13.11 paper jam message, the printer will list additional error codes in the error log. These can be printed or viewed.
A 2000-Sheet Input Tray Paper Jam error is related to the first device in the C-Link daisy chain. In the supported configuration, this device should be the 2000-sheet high-capacity tray. Verify that Tray 4 lifts to its feed position. Inspect the flags in the vertical transfer door.

12=External output device paper jam
If the control panel displays a 13.12 Paper Jam message, the printer will list additional error codes in the error log. These can be printed or viewed.

Multibin Mailbox/Stapler paper jam. The error is related to the second or third device on the C-Link daisy chain. In the supported configuration, the second device should be the Multibin Mailbox. Verify that all bins are in position and that the “scan bar” is complete. Verify that the Multibin Mailbox completes its power-up sequence. In the supported configuration, the stapler is the third device in the C-Link daisy chain. Verify that the stapler completes its power-up sequence.

13=Fuser accordion jam. Inspect the paper path before and after the fuser.

14=Printer could not auto-eject the paper. Inspect the entire paper path for paper or debris.

14 No EP Cartridge or No Toner Cartridge

All Printers

- A toner cartridge is not installed or the cartridge is not fully seated.
- The sensitivity tabs are missing (except 4 Plus, LJ 4, and 2686). Replace the toner cartridge.

4V

- The toner cartridge microswitch (SW501) on the high-voltage PCA is defective.
- The front-door-open sensor flag sensor is malfunctioning. PS402 is located on the small Front Door Unit Terminal PCA, on the front door under the transfer roller.
- The DC controller PCA is defective.

4 Plus, 4

- The toner cartridge is defective.
- The HVPS is defective or there are dirty or misaligned contacts.

4Si, IIISi

- Check the tabs on the right side of the toner cartridge. At least one of the two tabs must be present.
- The support tab of the switch actuator, which is located on the upper-right corner of the DC controller, is bent or installed incorrectly.
- The HVPS is defective.

IIID, III, IID, II

- The paper control PCA is defective.

2686A/D

- The cassette microswitch is defective.

16 Toner Low

All Printers

- The toner in the toner cartridge is uneven.
- The toner cartridge contact points are malfunctioning.
- The HV power supply is defective.

4Si, IIISi

- The door-open sensor flag is defective.
  - Replace the PS1.
- The toner level sensor connector is damaged.
  - Replace the toner level sensor.
- The toner cartridge is defective.
- The DC controller PCA is defective.

III, II

- The cable is defective.
  - Replace the DC controller to the HV power supply cable (part number RG1-0906-000CN).

18 MIO Not Ready

All Printers

- The printer is not connected to an active LAN.
  - Connect the printer to a LAN or terminate the connection, using a BNC T-connector with two 50-ohm resistors.
- The MIO card is misaligned or defective.
  - Reseat or replace the MIO card.

18 MIO Initialization

All Printers

- The error message remains on after 5 minutes.
  - Check the network card or host.

20 Error/Memory Overflow

All Printers

- A large print job exceeds memory capacity.
  - Verify that the SIMMs are seated. Add memory, remove soft fonts, decrease resolution, or simplify the print job. Adjust the settings for Image Adapt and Page Protect, if available.

6L/5L

- Set the enhanced input/output (I/O) to auto mode (printer command language [PCL] mode).
  - Re-send the print job. If the auto-continue variable is on within the printer job language (PJL), the printer will continue to print after 10 seconds. If it is off, press the front panel button to continue printing.

LJ 5

- There is too much data or the data is too complex.
  - Turn Image Adapt and Page Protect to On or Auto. (This can be set within the remote control panel.) Press **Go** to resume printing.

21 Error/Print Overrun

All Printers

- There is too much data or the data is too complex.
  - Simplify the print job or add memory.

6L, 5L, 6P, 5P

- Use the remote control panel to turn Page Protect to Auto or On.

5Si

- There is too much data or the data is too complex.
  - Enable Page Protect from the control panel and from the software. (This may require additional memory.)

LJ 5

- There is too much data or the data is too complex.
  - Turn Image Adapt and Page Protect to On or Auto. (This can be set within the remote control panel.) Press **Go** to resume printing.

4L

- There is too much data or the data is too complex.
  - Reduce the complexity of the print job.
- The print job is too complex.
  - Turn Image Adapt and Page Protect to On or Auto. (This can be set within the HP Explorer remote control panel.)
- There is not enough memory.
  - Add the optional memory module.

4M Plus, 4 Plus, 4M, 4

- There is too much data or the data is too complex.
  - Enable Page Protect from the control panel and from the software. (This may require additional memory.)

III, IIID, IIIP

- There is too much data or the data is too complex.
  - With 1 MB extra memory, enable Page Protect.

22 Error/ I/O Configuration Error/Par I/O Error/MIO Error

All Printers

- The I/O configuration for the computer or printer is incorrect.
  - Refer to the service manual for the proper configuration.
- The I/O Cable is wrong or damaged.
  - Replace the I/O cable with the specified (IEEE-1284) cable.
- The computer is turned off.
  - Turn the computer on.
- The printer I/O port is damaged.
  - Replace the I/O PCA or formatter PCA.

5Si

- A non-HP modular input/output (MIO) device is being used.
  - Replace with an HP MIO device.

6P, 5P, 5, 4 Plus

- The computer and printer are not communicating because of improper signal protocols. This indicates a loose cable connection or a bad or poor-quality cable.
  - Reseat the cable and make sure you are using a high-quality cable (IEEE-1284).

23 I/O Not Ready

All Printers

- The I/O card is unable to accept data or it is not connected to the network.
  - Check the I/O card seating and replace if necessary.

24 Job Memory Full

All Printers

- There is too much data or the data is too complex.
  - Add memory or simplify the print job.

25 XXX Memory Full

All Printers

- There is too much data or the data is too complex.
  - Add memory or simplify the print job.

30 PS Error 16

All Printers

- An I/O timeout or prompt for user interaction (for example, manual feed) has been exceeded.
  - Check the I/O connections; check if media requests are being made.

30 PS Error 22 or 25

All Printers

- An unexpected PostScript firmware error has occurred.
  - Replace the PostScript SIMM.

30 PS Error XX (all others)

All Printers

- A PCL file is being sent to the printer while it is in PostScript mode, or a PostScript file or application error has occurred.
  - Check the configuration, application, and print files.

30.1.1 Disk Failure

5 Si

- The optional disk failed a self-test.
  - Press **Select** to continue.

40 Error (data transfer error)

All Printers

- The computer and printer may be set to different baud rates.
  - Refer to the service manual to reset the baud rates.
- The computer is turned off.
  - Turn the computer on.
- The MIO card is unseated or defective.
  - Remove, reseat, or replace the MIO card.
- An abnormal connection break occurred while transferring data from the computer.
  - Press **Continue** or **Go** on the printer to clear the error message.

40.x MIO Error

5Si

- An abnormal connection break in the specified MIO card occurred.
  If x=1; HP MIO port 1 (upper slot)
  If x=2; HP MIO port 2 (lower slot)
  - Press **Select** to continue, or power cycle the printer. If the error persists, replace the MIO card.

41 Error (temporary print engine failure)

All Printers

- A momentary error has occurred.
  - Press **Continue** or **Go** to reset the printer.

6L, 5L

- Temporary Error
  - Power cycle the printer. If the error persists, reseat the formatter PCA to the DC controller PCA.
- Engine Error
  - Replace the formatter PCA. If the error persists, replace the DC controller PCA.

6P, 5P

- A temporary error occurred while printing.
  - This error most commonly occurs when the printer picks two sheets of paper at once. The page containing the error is reprinted automatically. Remove the page from the output tray and press **Go** on the printer.

IIIP, IIP Plus, IIP

- Paper feed problems have occurred.
  - Check the paper feed, especially the operation of the PS1.

IIIP, IIP Plus, IIID, III, IID, II

- The fiber optic cable is bent or broken.

IIP

- For service notes between 2925J00000 and 3047J99999:
  - Replace the fusing assembly.

IIID, III, IID, II

- There is a bad laser scanner or a bad laser scanner cable.
  - Replace the cable assembly from the DC controller to the laser scanner.

2686D/A

- The laser power is misadjusted.
  - Refer to the service manual to adjust the laser power.

41.1 or 2 Error, 41.3 Error

All Printers

- There are defective connections.
  - Reseat J205, J206, J207, and laser scanner connections.
- There is a paper multifeed or the wrong size of paper is being used.
  - See service notes C2001A-01 and -02 (for LJ4 and 4+).
- The paper size selection does not match the installed paper.
- One of the cassettes is overfilled or improperly adjusted.
  - Remove the paper from the cassette. Readjust the cassette.
- The paper does not meet HP specifications.

41.4 or 5 Error

All Printers

- The DC controller or formatter PCA is defective.

IIISi/4Si

- The tab on the toner cartridge is broken.

41.x Error

5Si, 5

- If x=1: Defective connections:
  - Reseat J205, J206, J207, and the laser scanner connections.
- If x=2: Beam detect malfunction:
  - Reseat the connectors, including the laser scanning assembly.
- If x=3: Paper size selection does not match installed paper or paper multifeed:
  - Check for paper jams, multifeeds, or misfeeds.
    Insert paper that is the correct size.
    One of the cassettes is overfull or improperly adjusted.
- If x=4: Sync error:
  - Reseat the DC controller and the formatter PCA connections.
- If x=5: Video sync or undetermined error:
  - Reseat the DC controller and the formatter PCA connections.

50 Error/50 Service (fuser malfunction)

All Printers

- A temporary error has occurred.
  - Turn the printer off for 20 minutes to clear the temporary 50 Error.
- The power is low or unstable (for example, in a brownout).
  - Locate and verify a stable power source.

6L, 5L

- Check the resistance between pins 1 and 2 from connector J102 of the DC controller and the thermistor.
  - If there is no resistance, replace the heating element. If the resistance is correct, replace the DC controller.

6P, 5P

- The fuser is defective.
- The DC controller is defective.

LJ 5, 4 Plus, 4

- The fuser or power supply is defective.
  - if the problem persists, replace the fuser and then replace the power supply.
- A temporary error has occurred.
  - Short the C202 (LJ 4) or C205 (LJ 4 Plus) on the DC controller to bypass the Error 50 time delay.

4V, 4L, 4P

- The fuser is improperly seated.
- The fuser is defective.

4Si, IIISi

- The fuser is improperly seated.
- The connector J201 is improperly connected.
  - Reseat the connector J201 on the sensor PCA.
- The SW 101 is disengaged.
  - Check the SW101 to make sure it is engaged with the top cover closed.
- A temporary error has occurred.
  - Turn the printer off. Short the DC controller CP005 to bypass the Error 50 time delay.

IIIP, IIP Plus, IIP

- The fuser assembly is defective.
- A temporary error has occurred.
  - Turn the printer off. Short the C212 on the DC Controller to bypass the Error 50 time delay.
- The power supply is defective.

IIID, III, IID, II

- The fuser is defective.
- The AC power module is defective.
- A temporary error has occurred.
  - Turn the printer off. LJ II only: Short the C211 on the DC controller to bypass the Error 50 time delay. LJ IID only: Short the C216 on the DC controller to bypass the Error 50 time delay.

III, II

- There is a defective fuser to the DC controller cable (hot fuser or blown thermoswitch).
  - Replace the cable fuser to the DC controller (part number RG1-0907-000CN).
- Check the fuser to the AC power module cable (cold fuser).
  - Replace the cable DC controller to the AC power module (part number RG1-0912-000CN).
- The +24VA is missing.
  - Check the voltage and replace the DC power supply as necessary.

2686A/D

- There is a blown 47 Ohm resistor.
  - Replace the plug-in resistor on the fuser safety PCA (part number FF1-3872-000CN).
- The fuser bulb is defective.
- The fuser safety PCA is defective.

50.x Fuser Error

5Si

- Fuser malfunction.
  If x=1: Fuser low temperature failure.
  If x=2: Warm up failure.
  If x=3: Over temperature failure.
  If x=4: Bad fuser.
  - Turn the printer off for 20 minutes, and then turn it back on. Verify that the fuser is installed correctly and fully seated. Reseat or replace the fuser cable assembly.

51 Error (loss of beam detect)

6L, 5L, 6P, 5P, 4P, 4L

- A temporary error has occurred.
  - Power cycle the printer.
- The laser scanner assembly is not seated.
- The laser scanner assembly is defective.
  - Replace the laser scanner assembly (or cable on the 5L only).
- The DC controller PCA is defective (5L, 5Si only).

LJ 5, 4Plus, 4

- The laser scanner cable connectors are faulty.
- The laser scanner assembly is defective.

4V

- There is a problem with the fiber optic cable.
- The laser scanner assembly is defective.

4Si, IIISi

- The toner cartridge is defective.
- There is a problem with the fiber optic cable.
- The connectors are faulty.
  - Reseat the connectors J002 on the DC controller and the J601 on the laser drive PCA.
- The DC voltage is poor.
  - Verify that the 12 VDC is present on the J601-2 of the laser drive PCA.
- The laser scanner assembly is defective.

IIIP, IIP Plus, IIP

- The toner cartridge is improperly seated.
- The laser shutter operation is functioning improperly.
- The fiber optic cable is damaged.
- The laser PCA is bad.

IIID, III, IID, II

- The toner cartridge is defective.
- There is a bad cable in the laser scanner to the DC controller.
  - Replace the cable in the laser scanner to the DC controller (RG1-0908-000CN).
- The fiber optic cable has cuts or kinks.
- The laser scanner assembly is defective.

2686D/A

- The laser or laser power setting is defective.
- The scanner is defective.

51.x Error

5Si

- Laser subsystem problem.
  If x=1: Beam detect malfunction.
  If x=2: Laser malfunction.
  - Press **Select** to resume operation. If error persists:
    Check the cable from the DC controller to the laser scanner.
    Replace the laser scanner assembly.
    Replace the DC Controller PCA.

52 Error (incorrect scanner speed)

6L, 5L, 6P, 5P

- A temporary error has occurred.
  - Power cycle the printer.
- The scanning assembly is improperly fitted.
- A problem has occurred with the scanner cable.
- The laser scanner assembly is defective.
- The DC controller PCA is defective.

LJ 5

- The laser scanner cable is faulty.
- The laser scanner assembly is defective.

4V, 4Si, IIISi

- The cable assembly is faulty.
- There is a scanner motor problem.
  - Listen for the scanner motor to start up, and watch for the LED 003 on the DC controller to illuminate (4Si, IIISi).
- The laser scanner assembly is defective.
- The DC controller PCA is defective.

4P, 4L

- A temporary error has occurred.
  - Power cycle the printer.
- The scanner assembly is improperly fitted.
- There is a scanner cable problem.
- The laser scanner assembly is defective.
- The DC controller PCA is defective.

4 Plus, 4

- The laser scanner cable is faulty.
- The laser scanner assembly is defective.

IIIP, IIP Plus, IIP

- The scanner motor is bad.
- The DC controller is bad.

IIID, III, IID, II

- The laser scanner cable to the DC controller is defective.
  - Replace the cable assembly (part number RG1-0908-000CN).
- The laser scanner assembly is defective.

2868A/D

- The scanner assembly is defective.

52.x Error

5Si

- Scanner subsystem problem.
  If x=1: Scanner startup failure.
  If x=2: Scanner rotation failure
  - Switch the printer off and then back on.
    If the error continues:
    Check the cable from the DC controller to the laser scanner assembly.
    Replace the laser scanner assembly.
    Replace the DC controller PCA.

53 Error (accessory memory error)

4Si, IIISi

- A temporary error has occurred.
  - Power cycle the printer.
- A laser malfunction has occurred.
  - See 51 Error recommendations.

IIIP, IIP Plus, IIP

- 53 Error Memory Unit 1 (on the top).
- 53 Error Memory Unit 1 (on the bottom).

IIID, III

- There is a failure in the front memory slot. (53.1 Error)
- There is a failure in the rear memory slot. (53.2 Error)

IID, II

- An accessory memory failure has occurred.

2686D/A

- A laser temperature malfunction has occurred.

53.XY.ZZ Error

6L/5L

- An error has been found in the RAM or ROM.
  - Power cycle the printer.
- The memory card is defective or incompatible.
  - Turn off the printer, remove any additional memory, then turn the printer back on. If the message clears, replace the memory card.
- The formatter PCA is defective.

5Si, 6P, 5P, 5, 4V, 4P, 4Plus, 4, 4Si

- A SIMM malfunction has occurred.
  - Verify that the SIMM board is installed correctly. Replace the SIMM that caused the error.

Table 1-1 53.XY.ZZ Error for 5, 5Si, 4 P, 4 Plus, 4, 4Si

x (Hardware Type)	zz (Error Number)
x=0, ROM	0=Unsupported memory
	1=Unrecognized memory
x=1, RAM	2=Unsupported memory size
	3=Failed RAM test
x=2, Flash	4=Exceeded maximum RAM size
Y (Hardware Device)	5=Exceeded maximum ROM size
y=0 Internal mem.	6=Invalid SIMM speed
(Formatter PCA)	7=SIMM reporting information incorrectly
y=1 SIMM Slot 1	8=SIMM RAM parity error
y=2 SIMM Slot 2	9=SIMM ROM mapped to an unsupported address
y=3 SIMM Slot 3	10=SIMM address conflict
y=4 SIMM Slot 4	11=ROM out of bounds
	12=Could not make temporary mapping

Note

An Error 53.1y.08 generates if HP LJ 4P Plus memory is installed in an HP LJ 4.

4L

- An error has been found in the RAM (or ROM: 5L only).
  - Power cycle the printer.
- The memory card is defective or incompatible.
  - Turn the printer off; remove any additional memory; then turn the printer back on. If the message clears, replace the memory card.
- The formatter PCA is defective.

54 Error

5Si

- The duplexer is defective.
  - Replace the duplexer.

IID, IIID: Duplex Feed Error

- The duplex shift plate is improperly fitted.
  - Check the duplex shift plate for correct position and operation.
- The PS5 or SL4 is bad.
  - Verify proper operation and replace as necessary.
- There is a defect in the main motor.
  - Replace the main motor or the power supply or main drive motor PCA.

2686 D/A: Main Motor Stall

- The input tray is too full.
  - Remove some of the paper.
- The fuser drive gears are bent or locked up.
  - Adjust or replace the fuser drive gears.
- The main motor has problems.
  - Replace the main motor.

55 Error (internal communication problem)

All Printers

- The cable is loose or bad.
- The DC controller PCA is defective.
  - Replace the DC controller PCA. **Note:** Error 55 on a LJ Series II requires replacing **both** the DC controller and the Interface PCA at the same time.
- The formatter PCA is defective.
- The paper input PCA is defective.
- The main motor is defective.
- There is inadequate site power (or the problem may be the result of thunderstorms). Examine the surge protector.
  - Replace the DC controller PCA and/or the formatter PCA if necessary.

4V

- The laser scanner assembly is defective.

4Si, IIISi

- The connectors are improperly fitted.
  - Check and reseat the connectors J4 and J5 on the low-voltage power supply. Check J8, J9, J10, and J15 on the DC controller PCA
- Cable is loose or faulty.
  - Check and reseat the cable between the DC controller and formatter PCAs.
- The DC controller is defective.
- The DC power supply is defective.
- The formatter PCA is defective.
- The paper input PCA is defective.
- The main motor is defective.

2686D/A

- The interface or formatter PCA is defective.

56 Error

4Si, IIISi

- An attempt is being made to print envelopes while the printer is in duplex mode.

IID, IIID

- The output selector knob is not in duplex position.

56.x Error

5Si

- An invalid input source or output destination has been selected.
  If x=1: invalid input source.
  If x=2: invalid output destination.
  - Check the input and output devices.
    Reselect a valid device.

57 Error

6L, 5L

- The memory card is incompatible.
  - Remove the card and replace it with a 1, 2, 4, or 8 MB, 5V, 70 nanosecond (nsec.) or faster card.

6P, 5P, 5

- The main motor is not functioning properly.
  - Check for any binding in the motor or gear train. Check the connection to the DC controller, and then replace the main motor or the DC controller as necessary.

4L, 4

- The main motor is not functioning properly.

IIIP, IIP Plus, IIP (57 Error 1)

- An incompatible memory card is in the top slot.
- An incompatible memory card is in the bottom slot.
- The motor cables or connectors are poorly seated.
- The main motor is defective.
- The DC controller PCA is defective.

IIID, III (57-1 Error)

- An incompatible memory card is in the front slot.
- An incompatible memory card is in the rear slot.

57.x Service

5Si, 4 Plus, 4Si, IIISi, (x=2, 3, or 4)

- The fan motor x is faulty.
  - Check fan number x, main, or duplexer fan, and replace if necessary.

LJ 5

- The main motor has failed.

4 Plus (x = 1)

- The gears are seized.
- The DC controller or main motor is bad.

4Si, IIISi (x = 1)

- The gears are seized.
  - Check and replace the top cover or fuser gears.
- The top cover switch is faulty.

- The AC kill switch operation is faulty.
- The connector J010 is improperly fitted.
- There is a bad main motor PCA or main motor.

58 Service

6P, 5P, 5, 4V, 4P, 4L, 4

- The fan cable is improperly fitted.
  - Check the fan cable; reseat the fan cable if necessary.
- The fan is defective.

4V

- The DC controller PCA is defective.

58.1 and 58.2

4Si, IIISi

- The paper cassette is improperly inserted.

58.x Printer Error

5Si

- Tray/lifter malfunction.
  If x=1: Tray 2 lifter malfunction.
  If x=2: Tray 3 lifter malfunction.
  If x=3: Tray 1 lifter malfunction.
  If x=4: Tray 4 lifter malfunction.
  - Press **Select** to continue.
    Repair or replace the tray lifter.

59 Add Memory

4Si, IIISi

- Not enough optional memory is installed to support the PostScript option for the application being used.
  - Verify that the SIMMs are seated properly; replace any defective SIMMs, or install additional SIMMs.

59.x Printer Error

5Si

- Main motor malfunction.
  If x=1: main motor startup failure.
  If x=2: main motor rotation failure.
  - Turn the printer off, and then turn it back on.
  - If the message persists:
    Check the cabling between the main motor and the DC controller.
    Replace the main motor.
    Replace the DC controller.

60 Service

4 P, 4 Plus, 4, 2686D/A

- The formatter PCA is defective.

60 Memory

4V, 4Si, IIISi

- The SIMMs are defective.

61 Service

4P, IIIP, IIID, III, IIP Plus, IIP, IID, II, 2686D/A

- The formatter PCA is defective.

61 Memory

4V, 4 Si, IIISi

- The SIMMs are defective.

61.x Service

All Printers

- The SIMM in slot x is improperly fitted.
- The SIMM in slot x is defective.
- The formatter PCA is defective.
  Note: If x=0, the SIMM slot could not be determined.

62 Service

4P, IIIP, IIID, III, IIP Plus, IIP, IID, II, 2686D/A

- The formatter PCA is defective.

62 Memory

4V, 4Si, IIISi

- The SIMMs are defective.

62.x Service/Printer Error, 62.0 Service, 62.1–4 Service, 62.5 Service, 62.6 Service

All Printers

- The font cartridge or the SIMMs are improperly fitted.
  - Reseat the SIMMs and/or the font cartridge; power cycle the printer.
- The internal memory is defective. (x=0)
  - Replace the formatter PCA.
- The SIMM in slot x is defective.
- The font cartridge (x=5) is defective.

4V

- Replace the cache.

63 Service

6L, 5L

- The formatter PCA is defective.
  - Power cycle the printer. Disconnect the parallel I/O cable and run a self test. If the error persists, replace the formatter PCA.

6P, 5P, 5, 4P, 4 Plus, 4, IIIP, IIID, III, IIP Plus, IID, II, 2686A/D

- The formatter PCA is defective.
  - Replace the formatter PCA.

4V

- The formatter PCA is defective.
  - Power cycle the printer; replace the formatter PCA.

4V, 4Si, IIISi

- The SIMMs are defective.

64 Service/Printer Error

All Printers

- The formatter PCA is defective.

5Si

- The DC controller PCA is defective.

65 Memory

4V, 4Si, IIISi

- The SIMMs are defective.

65 Service

All Printers (except 4Si, IIISi)

- The formatter PCA is defective.

4V, 4Si

- A temporary error has occurred.
  - Power cycle the printer.

65 Printer Error

5Si, 6P, 5P, 5

- A dynamic RAM error is indicated.
  - Turn the printer off, and then turn it back on.
    If the message persists, replace the formatter PCA.

66.x.yy Device Error

5Si

If the control panel displays a 66.x.yy device error message, the printer will list additional error codes in the error log. These can be printed or viewed. A device error message indicates a paper-handling error. The printer is unable to communicate with the external paper handling PCA. Verify that the C-link cables are installed correctly. Print the PCL configuration page and note which installed devices are not present on the configuration page.

x=paper-handling device
0=external paper handling (EPH) PCA
1=first device attached to EPH
2=second device attached to EPH
3=third device attached to EPH
4=fourth device attached to EPH
5=fifth device attached to EPH

– Switch the printer and paper-handling devices off and then on. If the message persists:

yy=paper-handling device error code

If yy=1-22, 24:

– Check the cabling between the printer and the device.
  Check the mechanical interface between the printer and the device.
  Replace the external paper-handling PCA.

If yy=23:

– Check the cabling and mechanical interface between the printer and the device.
  Replace the external paper-handling PCA.
  Repeat steps 1 and 2 to isolate the defective device.
  Repair or replace the defective device.

If yy=31:

The printer is not supported by the paper-handling device 1.

If yy=32:
The printer is not supported by the paper-handling device 2.

If yy=33:
The printer is not supported by the paper-handling device 3.

If yy=34:
The printer is not supported by the paper-handling device 4.

If yy=35:

The printer is not supported by the paper-handling device 5.

For error codes 31-35: Verify that the device is supported.

– If the device is supported, follow the steps under yy=23.

If yy=41:
Device 1 reports an invalid configuration.

If yy=42:
Device 2 reports an invalid configuration.

If yy=43:
Device 3 reports an invalid configuration.

If yy=44:
Device 4 reports an invalid configuration.

If yy=45:
Device 5 reports an invalid configuration.

For error codes 41-45:

– Verify proper configuration for the device.
  If the configuration is correct, follow the steps under yy=23.

67 Service/Printer Error

5Si

- The field replacement units (FRUs) are not installed properly.
  - Reinstall the FRUs.

LJ 5

- The formatter PCA is defective.
  - Reseat any accessories. If the error persists, replace the formatter PCA.

4V

- A temporary error has occurred.
  - Power cycle the printer.
- The paper guide and plate assembly are defective.

4P, 4Plus, 4, IIIP, IIID, III, IIP Plus, IIP, IID, II, 2686D/A

- The formatter PCA is defective.
  - Reseat any accessories. If the error persists, replace the formatter PCA.

4Si

- A temporary error has occurred.
  - Power cycle the printer.
- The paper guide and plate assembly are defective.

67 Memory

4V, 4Si, IIISi

- The SIMMs are defective.

68 Error/Service

All Printers

- The formatter PCA is defective.
- A temporary error has occurred.
  - Press **Continue** and check the control menu settings. Then, power cycle the printer.

6P, 5P

- (68 SERVICE) -NVRAM full.
  - Perform a nonvolatile random-access memory (NVRAM) initialization by holding down **Reset** for more than 20 seconds while turning on the printer.

5Si, 6P, 5P, 5

- (68 Error) - error in NVRAM.
  - Check the control panel settings. Replace the formatter PCA if the problem persists.

5Si, 5

- (68 SERVICE) -NVRAM full.
  - Power cycle the printer. If the problem persists, perform a NVRAM initialization by holding down **Item** or **Job Cancel** on the LJ 5) while turning the printer on. All control panel settings (including service mode settings) must be reset after this procedure.

4P, 4 Plus, 4

- (68 Error) There is an error in the NVRAM.
  - Check the control panel settings. Replace the formatter PCA if the problem persists.

4P, 4 Plus, 4

- (68 SERVICE) The NVRAM is full.
  - Power cycle the printer. If the problem persists, perform a NVRAM initialization by holding down **Item** while turning on the printer. All control panel settings (including service mode settings) will require resetting following this procedure.

68 Memory

4V, 4Si, IIISi

- The SIMMs are defective.

69 Service

All Printers

- The I/O PCA is defective.
  - Remove the optional I/O PCA, and then re-test.
- The formatter PCA is defective.
  - Replace the formatter PCA.

70–71 Error

All Printers

- The personality cartridge or the SIMM installed in the font or SIMM slot is incompatible with the printer.
  - Replace with compatible cartridges or the SIMM.

5Si

- The MIO cards are faulty.

72 Service

All Printers

- The formatter PCA or the font cartridge is defective.
  - Replace the formatter PCA.
- The font cartridge was removed during formatter PCA access.
  - Power cycle the printer and continue.

79 Service

All Printers

- Check the software; drivers; memory PCAs; font, macro, or personality; cartridges; and optional I/O cards. Check the toner cartridge for defects.
- Remove any accessories (such as font cartridges, memory PCAs, and SIMMs) that are plugged into the formatter PCA; reprint the file. If the problem persists, verify proper setup with the application vendor.
- The formatter PCA is defective.

5Si

- An unrecoverable firmware error occurred.

1 Power cycle the printer.

2 Reseat or replace the interface cable; power cycle the printer.

3 Remove the SIMMs one at a time and power cycle the printer.

4 Remove the MIO card(s) one at a time and power cycle.

5 Try using the parallel interface, if possible.

6 With the MIO cards out of the printer, perform a cold reset.

7 If the error continues, replace the formatter PCA. Write down the page count and serial number.

80 MIO Failure

All Printers

- The MIO connection is improper.
  - Inspect the pins on the formatter PCA MIO connection.
- The MIO card is defective.
- The formatter PCA is defective.

81 Error

All Printers

- The formatter PCA is defective.

89 PostScript ROM Failure

All Printers (except 6L and 5L)

- The PostScript ROMs have bent or broken pins.
- Inspect the PostScript ROMs/SIMM for bent or broken pins.
- The ROMs/SIMM are improperly located.
  - Check that the ROMs/SIMM are in the correct location and are oriented properly.
- A temporary error has occurred.
  - Power cycle the printer.
- The PostScript ROMs/SIMM are defective.

Blank Display

All Printers

- There is no power.
  - Check the AC and DC voltages.
- The display panel, related cabling, or drive circuitry is defective.
  - Check the input voltages that illuminate the display panel.
- The display, cable, formatter PCA, or DC controller is faulty.

4V

- There is no power.
  - Verify the input power, and then check CB101 and F101.
- The control panel or formatter PCA is defective.
  - Print an engine test print; if it is satisfactory, replace the control panel and then replace the formatter PCA.

All LEDs Off (blank display)

6L, 5L

- The printer is in sleep mode.
  - Press the front panel button or open the EP door.
- No power is supplied to the printer.
  - Check the power cord connections and the power source.
- Determine if the print engine is functional.
  - Print an engine test; if it is successful, replace the formatter PCA.
- The control panel PCA cable is defective.
- Check the fuses on the DC controller.
- The formatter PCA is defective.
- The DC controller is defective.

4L

- The printer is in Intelligent Off mode.
  - Press the front panel button, or open the top door.
- Power is not supplied to the printer.
  - Check the power cord connections and the power source.
- Print an engine test print to determine if the print engine is functional.
  - If the test is successful, replace the formatter PCA.
- Check fuses FU101 and FU201 on the DC controller PCA.
  - Replace if necessary.
- The DC controller PCA is defective.
- The connector between the DC controller and the formatter PCA is defective.
  - Replace the connector.

All LEDs On (without pressing the front panel button)

6L, 5L, 4L

- This is a service error.
  - Hold down the front panel button to display the error LED code. This code will be shown only while the button is pressed.
- All LEDs remain on while pressing the front panel button.
  - Power cycle the printer. If the error persists, replace the formatter PCA.

Data and Ready LEDs are Blinking

6L, 5L

- This indicates a firmware error.
  - Note the LED pattern, bitronics error code, printer condition, data sent, and any other information that may help to isolate the error. Contact HP technical support with this information.

Data LED is Blinking

6L, 5L

- The printer is set to manual feed.
  - Insert paper into the manual feed slot. Ensure that the correct paper is loaded in the printer. Press and release the front panel button. If manual feed is not desired, turn off the setting in the software application.
- The printer is stuck on manual feed.
  - Press the front panel button to override the manual feed request and to feed paper from the paper cassette.
- The input paper sensor (PS1) or the front oblique roller assembly is defective.
  - Replace the PS1 or the front oblique roller assembly.

Display Is All Block Characters

All Printers

- The display cable is defective or disconnected.
  - Reseat or replace the display panel cable.
- The control panel is defective.
- The formatter PCA is defective.
  - Check and replace as needed.

Error LED is On Continuously

6L, 5L

- Power cycle the printer.
- There is a bad connection between the formatter PCA and the AC controller.
- The formatter PCA is defective.
- The AC controller is defective.

Tray 1 LED is Blinking

6P

- The printer is set to manual feed. Insert paper into Tray 1 and press **Go**.

FS Disk Failure

4V

- The printer detected a disk failure.
  - Press **Shift** + **Continue** to continue printing.
- A temporary error has occurred.
  - Power cycle the printer.

- The disk drive is improperly fitted.
  - Reseat the disk drive; ensure that the connector pins are fully seated.
- The disk drive is not installed.
  - Run a self-test to verify the presence of the disk drive (look under Installed Options: Disk on the self-test page).
- The disk drive is defective.
  - Replace the disk drive.

PC Install

4V

- The paper size is incorrect.
  - Verify that the correct paper-size label (protruding tab) is installed in the left side of the paper cassette.
- The size-sensor arm is damaged.
  - Check cassette-size sensor arms for bending or damage.
- The DC controller PCA is defective.
  - Replace the control panel. If the problem still exists, replace the formatter PCA.

4V, 4 Plus, 4

- The lower cassette (Tray 3) is selected and the printer has detected that the paper cassette (Tray 2) is not installed.
  - Install or reseat the paper cassette (Tray 2). Tray 2 is the paper guide for the lower cassette (Tray 3).
- The paper cassette is improperly fitted.

2 Service mode

Overview

This chapter provides the procedures used to access service mode and related functions.

Service Mode Tasks

You can perform the following tasks while in service mode.

- Print a service mode self-test page.
- Verify the page count. (The page count is also displayed on the **standard** self-test page.)
- Set the page count (not available on 4L and IIP).
- See the maintenance count and serial number (4 Si and IIISi).
- Set the cold reset default (LJ5, 4P, 4 Plus, LJ4). This sets the factory default paper size.
- Set the diagnostic function on and off (LJ5, 4P, 4 Plus, LJ4), (for software developers use only).
- Remove the demo page option from the self-test menu: Demo Page = On/Off (LJ5, 4 P, 4 Plus, LJ4).

Note

The tasks listed above are **not** available on the 2686D/A.

Accessing Service Mode

Use the following procedures to access service mode.

Note

There is no service mode or NVRAM on LaserJet 6L, 5L, 6P, 5P, or 4L printers. The page counts are retained only while the printer is plugged in; the page count is lost when the printer is unplugged.

Note

Use PJL commands in the software to access service mode in LJ5P and LJ 4 ML printers. See the service manual for more information.

LJ5Si Mopier, LJ5 Si

1. Turn the printer off.
2. Press **Items** and **+** simultaneously while turning the printer on.
3. Press **Select**. After a few seconds the printer should display `Service Mode`.

LJ5

1. Turn the printer off.
2. Press **Menu +** and **Value+** simultaneously while turning the printer on.
   After a few seconds the printer should display `Service Mode`.

LJ 4V, 4P, 4Plus, 4, 4Si

1. Turn the printer off.
2. Press **On Line**, **Form Feed**, and **Enter** simultaneously while turning the printer on.
3. Press **Form Feed**, and then press **Enter**.
   After a few seconds the printer should display `Service Mode`.

LJ IIISi

1 Turn the printer off.

2 Press **On Line**, **Continue**, and **Enter** simultaneously while turning the printer on.

3 Press **Continue**, and then press **Enter**.
After a few seconds the printer should display `Service Mode`.

LJ IIIP, IIP+, IIP

1 Turn the printer off.

2 Press **On Line**], **Menu**, and **Enter** simultaneously while turning the printer on.

3 Press **Form Feed**, and then press **Enter**.
After a few seconds the printer should display `Service Mode`.

LJ IIID, III, IID, II

1 Turn the printer off.

2 Press **On Line**, **Continue/Reset**, and **Enter/Reset Menu** simultaneously while turning the printer on.

3 Press **Continue/Reset**, and then press **Enter/Reset Menu**
After a few seconds the printer should display `Service Mode`.

Setting the Page Count

(except on the LJ 6L, 6P, 5P, 4L, IIP)

The page count is stored in the printer in non-volatile memory. If it is necessary to replace the formatter PCA, the page count should be reset to the original page count to reflect the age of the print engine. Use the following procedure to set the page count.

1. When `00 SMODE` or `SERVICE MODE` is displayed, press **Menu** to modify the page count.
   4, 4+, and 4P only: Press **Menu** to access the service menu. Press **Item** to proceed through the menu.
   `PAGES=XXXXXX` is displayed. (`XXXXXX` represents the page count currently stored in non-volatile memory in the printer. The underlined character denotes the position of the cursor.)
2. Press **+** (or **ALT** and **-**) to scroll until the correct value is displayed for the underlined digit.
3. Press **Enter** to select the correct value. The cursor automatically moves one place to the right.
4. Set each digit in the same manner. When the last digit's value has been selected, the display returns to `00 SMODE` or `SERVICE MODE`.
5. Press **On Line** to exit service mode.

Setting the Page Count and Serial Number

LJ 4V

1. Enter service mode. See page 74 for instructions.
2. When `Service Mode` is displayed, press **Menu** to access the service menu.
3. Press **Item** to proceed through the menu. `Pages=XXXXXX` is displayed. (`XXXXXX` represents the page count currently stored in non-volatile memory in the printer. The underlined character denotes the position of the cursor.)
4. Press **Enter** to scroll the cursor to underline the desired digit.
5. Press **+/ -** to select the correct value.
6. Press **Enter** to store the new value in NVRAM.
7. Set each digit in the same manner.
8. Press **On Line** to return the display to `Service Mode`.
9. Press **On Line** a second time to exit service mode.

Setting the Page Count

LJ 5Si, 4Si, IIISi

1. Hold down the **Item-** and **Value-** keys.
2. Turn the printer on.
3. Wait until `RESET MAINTENANCE COUNT` displays and then release both keys.

Note

`MAINTENANCE COUNT` in the Service Mode menu sets the page count interval at which the next service is due for the printer. This is set initially at the factory to 200,000 pages (350,000 for 5Si printers). Editing this item is similar to editing the `Pages` item.

Setting the Default Paper Size for a Cold Reset

The initial default paper size for the formatter PCAs in Europe is A4. When replacing formatters whose default is set for A4 (European Formatters), set the customization variable to A4. When the customization variable is set to A4, the cold reset procedure cannot reset the paper size to Letter.

Use the following procedures to customize the cold reset paper size:

LJ 5Si

1. Enter service mode. See page 74 for instructions.
2. Press **Menu** to access the Service Menu.
3. Press **Items** to step through the menu until COLD RESET PAPER=LETTER* is displayed.
4. Press **+** to toggle between Letter and A4 paper.
5. Press **Select** to activate your choice.
6. Press **On Line** to exit service mode.
7. Perform a cold reset to activate a new choice.

LJ 5

1. Turn the printer off.
2. Hold **Go** down while turning the printer on.
   FACTORY DEFAULTS BEING RESTORED is displayed. The cold reset does not take effect until READY is displayed.
   When READY displays, the default settings have been returned to the factory defaults and the printer is ready to accept new settings.

LJ 4V

1. Enter service mode. See page 74 for instructions.
2. Press **Menu** to access the service menu.
3. Press **Item** to step through the menu until CR PAPER=LETTER* is displayed.
4. Press **+/ -** to toggle between Letter and A4 paper.

5 Press **Enter** to save your selection.

6 Press **On Line** to return the display to SERVICE MODE.

7 Press **On Line** a second time to exit service mode.

LJ 4, 4 Plus, and 4P Only

1 Enter service mode as described in this section.

2 Press **Menu** to display SERVICE MENU.

3 Press **Item** to display CR PAPER=LETTER*.

4 Press **+/ -** to toggle between Letter and A4 paper.

5 Press **Enter** to save your selection.

6 Press **On Line** to exit service mode.

Setting the PowerSave Interval

In service mode, you can add an additional 10-second time interval to the PowerSave function.

LJ 4V

1 With Service Mode displayed, press **Menu** until JOB MENU is displayed.

2 Press **Item** until PWRSAVE= is displayed.

3 Press **+/ -** until the desired time interval is displayed.

4 Press **Enter** to save your selection.

5 Press **On Line** once to return to service mode.

6 Press **On Line** again to place the printer back online.

3 Power supply

Overview

The following schematics will assist in checking and verifying printer systems and functions, including operating voltages, power supplies, and circuitry.

LaserJet 6L, 5L

The DC controller PCA coordinates all print engine activities, drives the laser, and coordinates print data from the formatter PCA with the image formation process. The DC controller includes both an AC and DC power supply and distribution circuitry.

The DC controller controls the following systems and functions:

Print Engine Control

- Laser and Scanner Drive
- Paper Motion Photosensors (Paper Out, Paper Registration, and Paper Exit Sensors)
- Motor

Power System

- AC Power Distribution
- DC Power Distribution
- Overcurrent/Undervoltage Protection
- SleepMode
- High Voltage Power Distribution

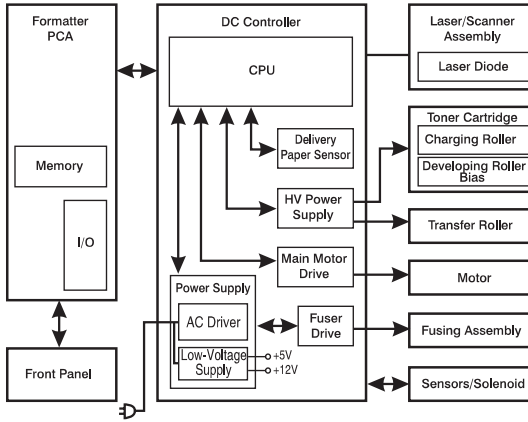


Figure 3-1 **DC Controller Loads**

The AC and DC power supply circuits are contained in the Low Voltage Power Supply (LVPS). The high voltages required for image formation are generated by the High Voltage Power Supply (HVPS). The Low Voltage Power Supply and Distribution System are illustrated below.

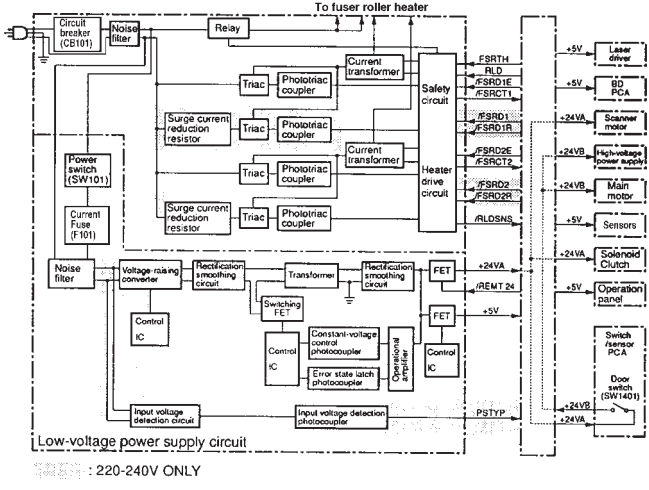


Figure 3-2 **Low Voltage Power Supply and Distribution System**

The DC power supply circuitry, located on the DC controller PCA, generates +5 DC and +12 DC. Uses for each are summarized below.

+5 DC

- Formatter PCA
- Photosensors
- DC controller circuitry
- Laser scanner assembly

+12 V DC

- High voltage power supply
- Main motor
- Solenoids
- Fan (through the laser scanner assembly)

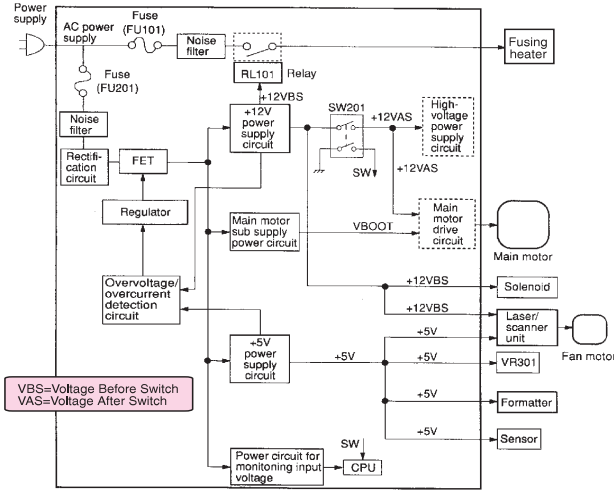


Figure 3-3 Power System Block Diagram

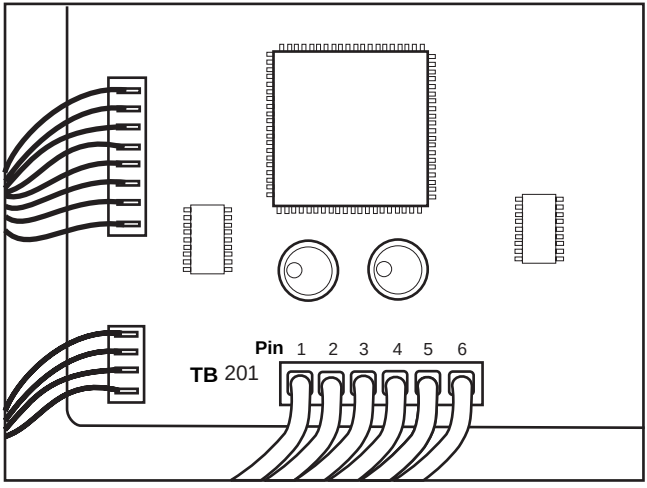


Figure 3-4 DC Power Supply Checks (LJ5, LJ4 & LJ4+) TB201 on DC controller

Use this procedure to verify the operating voltages of the LJ5, LJ4, and LJ4+:

1. Listen for the exhaust fan. A rotating fan indicates that the +5V DC and the +24 V DC are present. (The fan runs on +24V DC.)
2. Listen for the main motor. If the main motor runs, +24V DC is enabled.

TB201 electrical connector

Voltage	Color	Pin Number
+5V DC	Brown	1, 2
+24V DC	Red	3
Ground	Blue	4, 5, 6

The DC power distribution circuitry, located on the DC controller PCA, distributes +5 V DC, +12 V DC, and +24 V DC, as shown.

+5 V DC

- Control Panel
- Formatter PCA
- Photosensors (PS 401, PS 402)
- DC Controller Circuitry
- Laser Scanner Assembly
- Exhaust Fans, FM1 and FM2 (low speed)
- Intake Fan, FM3

+12 V DC

- Laser Scanner Assembly

+24 V DC

- Laser Scanner Assembly
- High Voltage Power Supply
- Clutches and Solenoids
- Exhaust Fans, FM1 and FM2 (high speed)

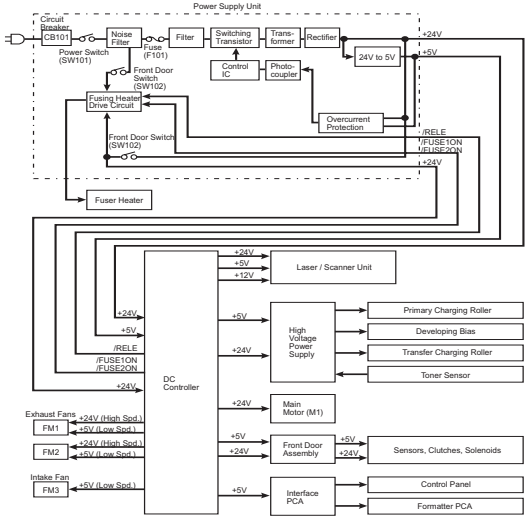


Figure 3-5 DC Controller Loads

LaserJet 4Si, IIISi

Follow this procedure to verify the voltages on the LaserJet 4Si and IIISi printers:

1. Listen for the fans. Running fans indicate that the +5 V DC and the +24 V DC are present.
2. Make sure that the 24A V DC is available on pin 1 of J203 on the sensor PCA.
3. Listen for the main motor to start. If the main motor runs, 24B V DC is enabled. This means that the 24B V DC is also present.

LaserJet 4Si, IIISi Voltage Test Points

Voltage	Test Point	Notes
+5 V DC	CP031	On DC controller
+24 A	CP028	On DC controller
+24 B	CP023 and top of R 006	On DC controller (off when the top cover is open)
+12 V DC	J14, Pin 5	Present when top cover is closed

LaserJet IIIP, IIP+, IIP

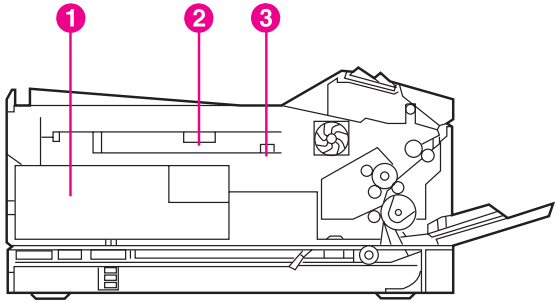


Figure 3-6 DC Power Supply Checks (IIIP, IIP+, IIP)

1 DC power supply

2 J1 on formatter PCA

PIN	1	n/c	2	3	4
SIGNAL	+5	n/c	+5	Ground	Ground
COLOR	Brown		Brown	Blue	Blue

3 J212 on DC Controller

Pin Number	**Color**	**Supply**
1	BLUE	GROUND
2	BLUE	GROUND
3	RED	+24V *
4	RED	+24V *
5	BLUE	GROUND
6	ORANGE	+12V
7	BLUE	GROUND
8	BROWN	+5V
9	YELLOW	/FSRDRV
*Requires that the paper path door is closed or the power supply interlock disabled.		

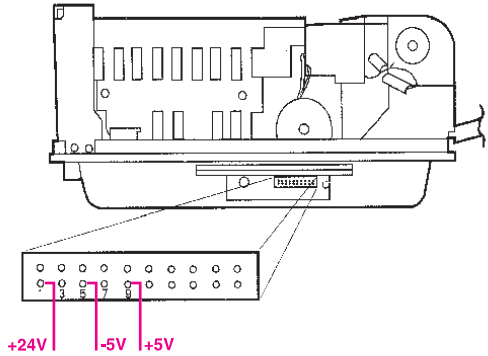


Figure 3-7 DC Power Supply Checks (IIID, III, IID, II)

The LaserJet Service Diagnostic Tool can also be used to check voltages.

Test tool III, II: Part number 33440-67905

- Checks DC voltages
- Checks high-voltage bias
- Runs test patterns

Test tool IIID, IID: Part number 33447-67906

- Checks DC voltages
- Checks high-voltage bias
- Monitors the status of the paper sensors
- Monitors the status of the solenoids

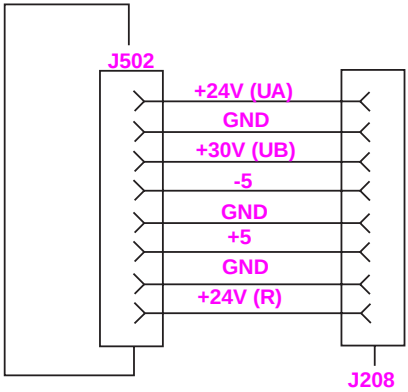


Figure 3-8 **DC Power Voltage Supply Checks (2686D, 2686A)**

4 Input/Output (I/O)

Overview

This section provides information on cabling and the printer interface.

Bidirectional Parallel Interface (LJ 6L, 5Si, 5L, 6P, 5P, 5, 4V, 4P, 4L, 4 Plus, 4, 4Si, and IIISi)

The bidirectional parallel interface (IEEE-1284 compliant) is compatible with Centronics parallel interfaces. The following items are required to take advantage of the enhanced capabilities provided by bidirectional parallel interfaces, such as bidirectional communication:

- Software application support for these features.
- An IEEE-1284 compliant parallel cable with the correct pin configuration (see below).

Signal Name	Printer Pin #	Parallel Port Pin #
nSTROBE	1	1
DATA 1	2	2
DATA 2	3	3
DATA 3	4	4
DATA 4	5	5
DATA 5	6	6
DATA 6	7	7
DATA 7	8	8
DATA 8	9	9
nACKNLG	10	10
BUSY	11	11
CALL (PE)	12	12
SELECT	13	13
nAUTOFd	14	14
On VDC (GND)	19 THRU 30	18 THRU 25
nFAULT	32	15
nSelIn	36	17

IEEE-1284 Compliant Parallel Cables

HP helped develop the IEEE-1284 standard and is one of the first companies to introduce products that are compliant with it. HP offers the following IEEE-1284 compliant parallel cables.

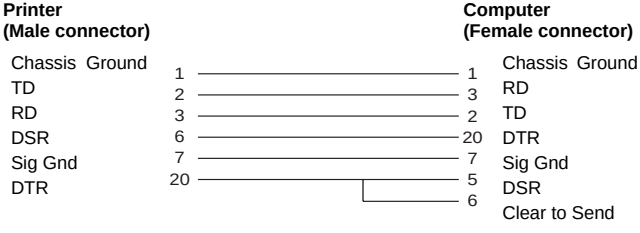
Part Number	Length	Connector Type
C2950A	2 meters (7 feet)	Host A to printer B (large) connector
C2951A	3 meters (10 feet)	Host A to printer B (large) connector
C2945A	2 meters (7 feet)	Host A to printer C (small) connector
C2946A	3 meters (10 feet)	Host A to printer C (small) connector
C2947A	10 meters (33 feet)	Host A to printer C (small) connector

RS-232-C/RS-422-A Serial Interface

Common Serial I/O Cables

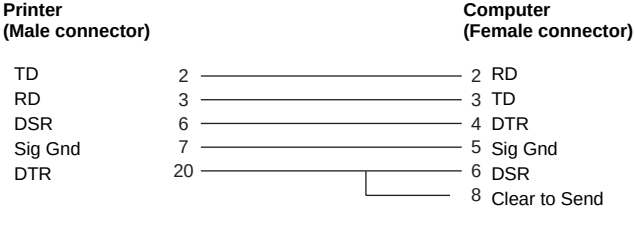
The following serial cabling schematics are typical of IBM (AT/XT) and compatible personal computers that use the standard (9/25) pin serial RS-232C interface.

Male DB-25 cable to Female DB-25 (17255D)

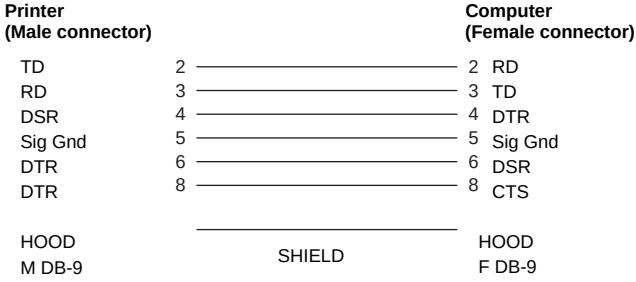


(Pins not shown are not used)

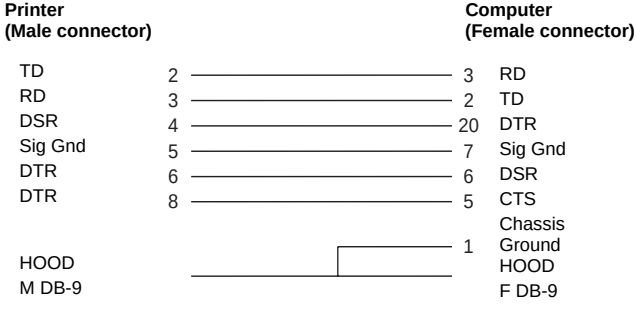
Male DB-25 cable to Female DB-9 (24542G)



Male DB-9 cable to Female DB-9 (C2932A)



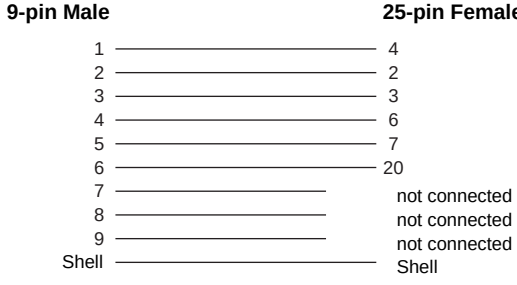
Male DB-9 cable to Female DB-25 (C2933A)



25- to 9-pin serial adaptor (P/N C2809A)

The pin-outs for the adaptor are shown below:

C2809A pin configuration



Serial I/O Specifications

Handshaking Protocol	RS-232-C: Xon/Xoff (software) and Data Terminal Ready (hardware) RS-422-A: Xon/Xoff (software) only The signal logic or “sense” of the data terminal ready (DTR) line is switchable to either active HIGH (the factory default) or active LOW from the printer control panel.
Data Format	Asynchronous with 1 start bit, 8 data bits, and 1 stop bit
Parity	Not used
Supported Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200, 57600*, 115200**

*LJ 4 and newer: Supports up to 57,600 Baud
**LJ 4000/LJ 5000: Supports up to 115,200 Baud

Maximum I/O Cable Lengths

Serial RS-232C RS-22A	15 meters (50 feet) 1200 meters (4,000 feet)
Parallel (non-IEEE 1284)	3 meters (10 feet)
Parallel (IEEE 1284 with “B” type connector)	3 meters (10 feet)
Parallel (IEEE 1284 with “C” type connector)	10 meters (34 feet)

Configuring the Computer Interface

The following information applies to IBM personal computers (PCs) and compatible computer systems.

Use MS-DOS® EDIT or a similar program to enter the appropriate MS-DOS MODE commands in the computer's AUTOEXEC.BAT file. See the getting started guide or set-up manual for the printer for step-by-step instructions.

For parallel communication, enter:

```
MODE LPT1:,,B
```

(Note: Change “B” to “P” if <DOS 4.0.)

For serial communication, enter:

```
MODE COMn: 9600,N,8,1,B
```

(Note: Change “B” to “P” if <DOS 4.0.)

```
MODE LPT1:=COMn
```

where n=1, 2, or 3, depending on which COM port is used (that is, COM1, COM2, or COM3)

Verifying Communication

MS-DOS

Use this procedure to verify communication between an MS-DOS computer and an HP LaserJet printer:

1. Turn the computer on.
2. Turn the printer on.
3. Wait until the printer displays `00 READY`.
4. At the DOS prompt, type `DIR >PRN` and press **Enter**. When you do, the printer's Form Feed light should illuminate.
5. If necessary, take the printer off line and press **Form Feed** to eject the page.

Macintosh

Use this procedure to verify communication between a Macintosh computer and an HP LaserJet III printer:

Note

The LaserJet printer must have PostScript and AppleTalk installed and have at least 1 megabyte of additional memory.

1. Turn the computer on.
2. Make sure the PostScript cartridge is properly seated.
3. Turn the printer on and wait until the printer displays `POSTSCRIPT READY`.
4. Verify that the front panel is set to `I/O=APPLETK`.
5. Pull down the **Apple** menu.
6. Select **Chooser**.
7. Select **Printer Type**.
8. Select **Printer** (*AppleTalk* must be active).
9. Close Chooser by selecting **box** in the upper-left corner.
10. Pull down the **File** menu.
11. Select **Print Window** or **Print Desktop**. The `READY` light should start flashing before the page ejects.

Infrared Communications (6P, 5P, 5 Only)

The 6P, 5P, and 5 printers feature an infrared (IR) port that is compliant with the Infrared Data Association (IrDA) standard. (The LaserJet 5 requires an additional transceiver pod.) A status light indicates when the port is active. The light is located just above the port, which is located on the lower-left corner of the LJ 6P and the LJ 5P, and on the pod on the LJ 5.

Note

The IrDA standard for infrared communications represents an emerging technology. Older portable devices that are not IrDA-compliant may not be compatible with these printers.

Troubleshooting IR Printing Problems

IR printing problems can be caused by any of the several system components or by a lack of proper configuration. The following checklist will help determine the source of the problem.

1. Verify that the user is operating the printer and PC as described in the user guide: less than 1 meter between devices, and not more than +/-15 degrees from the direct center.
2. Verify that the host PC or laptop and the printer are IrDA-compliant and have the necessary hardware components for IR communication.
3. Verify that the IR software has been loaded on the primary device (system software from the PC manufacturer).
4. Verify that the host PC or laptop is properly configured. Check the port assignment, the interrupt request (IRQ) level, and the base address value. Check both the DOS AUTOEXEC.BAT and CONFIG.SYS files, and check the Windows system configuration.

IR Test Tool

If all these elements are properly installed and configured, use the IR Tester to test the IrDA protocol transmission and device operation. Designed for troubleshooting IR communication problems, this tool was developed by Genoa Technology, Inc., in cooperation with Hewlett-Packard. The part number is **5062-4661**. Order it through HP Parts Direct Ordering (see inside back cover).

To test the peripheral device:

1 Put the LaserJet printer in READY mode.

2 Press the “Peripheral Test” button on the tester. The LEDs on the tester will illuminate in sequence.

If the “PASS” LED lights, the test was successful, which indicates that communication with the printer's IR port is functioning normally. A self-test page will print as a result of the test.

If the “TEST” LED goes out and the “PASS” LED fails to light, the printer's IR port is not functioning correctly.

To test the host computer:

1 Place the tester on a table in front of the PC's IR port.

2 Press the “Computer Test” button. The tester will sequence the LEDs.

If the “PASS” LED lights, the test was successful, which indicates that communication with the computer's IR port is functioning normally.

If the “TEST” LED goes out and the “PASS” LED fails to light, the host's IR port is not functioning correctly.

Selecting the I/O Type

Use the front panel menus to select the I/O type and to configure the I/Os. When the formatter PCA is replaced, the I/O type will reset to the default value.

In early LaserJet printers (2686D/A), use the formatter switches to select the I/O configuration, as follows.

LaserJet 2686D, 2686A Only

Setting Switch 1 (SW1)

Switch No.	Use	ON	OFF
1[1]	I/O Type	Parallel	Serial RS 232C/422
2-4[2]	Baud Rate	See figure 4-1.	See figure 4-1.
5[1]	Auto Continue	Continues on print and data errors after flashing 10 times.	Flash error occurs until the operator presses **Continue**.
6[1]	Robust X-ON	X-ON is repeated every 1 second when the printer is waiting for data.	Only 1 X-ON is sent when the printer needs more data.
7[3]	Auto Select Mode	Powers up in auto-select mode.	Powers up with auto-select mode off.
8[2]	DTR Polarity	DTR pin 20 high when the printer is ready.	DTR pin 20 low when the printer is ready.

[1] Refers to HP 2686A+ and HP 2686D models

[2] Refers to all models of HP 2686 printers

[3] Refers to HP 2686D models only

Baud Rate Switch (SW1)

Switch Number			Baud Rate
2	**3**	**4**	
OFF	OFF	OFF	300
OFF	OFF	ON	600
OFF	ON	OFF	1200
OFF	ON	ON	2400
ON	OFF	OFF	4800
ON	OFF	ON	9600
ON	ON	OFF	19200

Figure 4-1 **Baud Rate Switch**

5 Media specifications

Overview

Select media that meets the specifications listed on the following pages. By doing so, you will minimize the incidents of jams, prevent premature wear to the printer, and reduce repair costs. Hewlett-Packard recommends testing print media before buying it in large quantities.

Note

For complete paper specifications for all LaserJet printers, see the *HP LaserJet Family Paper Specification Guide*.

Paper Sizes

Metric System

Size	Metric Dimensions	U.S. Dimensions
A0	841 x 1189 mm	33.1 x 46.8 in
A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3. in
B4 (ISO)	250 x 353 mm	9.8 x 13.9 in
B5 (ISO)	176 x 250 mm	6.9 x 9.8 in

Imperial (U.S.) System

Size	U.S. Dimensions	Metric Dimensions
Ledger	11 x 17 in	279 x 432 mm
Legal	8.5 x 14 in	216 x 356 mm
Letter	8.5 x 11 in	216 x 279 mm
Executive	7.25 x 10.5 in	184 x 267 mm
JIS B4**	10.1 x 14.3 in	257 x 364 mm
JIS B5**	7.2 x 10.1 in	182 x 257 mm
J Postcard*	3.9 x 5.8 in	100 x 148 mm
J Double Postcard*	5.8 x 7.9 in	148 x 200 mm
* J - Japanese ** JIS Japanese Industry Standard		

Paper Specifications

Category	Specifications
Acid Content	5.5 pH to 8.0 pH
Basis Weight: LJ 5, 6L front output slot LJ 6P Tray 1	60 to 163 g/m^2 (16 to 43 lb)
LJ 5P paper cassette LJ 5L,6L paper output bin LJ 5 Tray 2 LJ 5Si Tray 2, Tray 3,Tray 4* *(Opt. 2000 sheet feeder) LJ 6P Tray 2	60 to 105 g/m^2 (16 to 28 lb)
LJ 5Si Tray 1	60 to 199 g/m^2 (16 to 63 lb)
LJ 5 Tray 1	60 to 135 g/m^2 (16 to 36 lb) (5P may use media up to 42 lb with Sheffield rating of 100 to 180 in the manual feed slot only)
LJ 5 Tray 3	60 to 90 g/m^2 (16 to 24 lb)
4V, 4MV all paper sources	64 to 105 g/m^2 (17 to 28 lb)
II, III IID, IID upper Tray LJ 4, 4+ MP Tray LJ 4L, 4P manual feed slot	60 to 135 g/m^2 (16 to 36 lb) (4P and 5P may use media up to 42 lb with Sheffield rating of 100 to 180 in the manual feed slot only)
IIP, IIIP, IIP+ IIISi, 4Si simplex LJ 4, 4+ PC Tray LJ 4L, 4P paper cassette	60 to 105 g/m^2 (16 to 28 lb)
IID, IID lower Tray IID, IIID 4+ duplex IIISi, 4Si duplex LJ 4, 4+ LC Tray	60 to 90 g/m^2 (16 to 24 lb)
Caliper	3.0 to 7.0 mils (0.094 to 0.18 mm)
Curl In ream	Flat within 5 mm (0.2 in)
Cut edge conditions	Cut with sharp blades with no visible fray
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200° C (392° F) for 0.1 seconds
Grain	Long grain
Moisture content	4% to 6% by weight
Smoothness	100-250 Sheffield

Paper Weight Equivalences (Approximate)

	Metric Weight (g/m^2)		U.S. Weight (lb) or Thickness (mm)						
	Europe	Japan	Postcard* thickness	Bond Wt	Text Book Wt	Cover Wt	Bristol Wt	Index Wt	Tag Wt
1	60	60		16	41	22	27	33	37
2	64	64		17	43	24	29	35	39
3	75	75		20	50	28	34	42	46
4	80	80		21	54	30	36	44	49
5	80	80		22	56	31	38	44	49
6	90	90		24	60	33	41	50	55
7	100	100		27	68	37	45	55	61
8	105	105		28	70	39	49	58	65
9	120	120		32	80	44	55	67	74
10	120	120		34	80	44	55	67	74
11	135	135		36	90	50	62	75	83
12	148	148	.18	39	100	55	67	82	91
13	157	157	.19	42	107	58	72	87	97
14	163	163	.20	43	110	60	74	90	100
15**	176	176	.23	47	119	65	80	97	108

* U.S. postcard measurements are approximate. Use for reference only.

** This media weight (row 15) may perform to your satisfaction but it is beyond the printer's specifications. Printing with this media weight will not damage the printer.

Troubleshooting Paper Problems

Paper problems can be difficult to detect. The following series of steps will help isolate paper-induced problems versus printer problems:

- Isolate a paper path.
- Isolate a brand of paper.
- Isolate a type of paper.
- Evaluate paper-use practices.
- Evaluate environmental conditions.

Here are some simple tips:

- Turn the paper over and print on the other side. Doing so often corrects excess paper curl.
- Rotate the paper 180° (end-for-end) to feed a different leading edge. This can help correct multi-sheet feeding problems.

Papers to Avoid

- NCR self-carbon (or “carbonless” paper)
- Paper that has been preprinted (such as letterhead) with ink that will not withstand fuser heat (205° C [400° F] for 0.1 second)
- Plastic-fiber paper
- Embossed paper
- Paper with cutouts or perforations
- Chemically treated paper
- Coated paper
- Synthetic paper
- Multi-part forms
- Odd-sized paper

If your printer is having trouble with paper jams, multi-feeds, or misfeeds, use HP-brand paper: HP 20 lb Multi-Purpose Paper, (part number 9300-2092); HP 24 lb LaserJet Paper, (part number 9300-2091).

Paper Curl

Paper curl results both from the heating process used to bond the print image (toner) to the paper and from the path the paper must negotiate through the printer.

Take the following actions to help reduce paper curl:

1. Turn the paper over in the input tray. Some paper packages (reams) have an arrow indicating the preferred printing side. Experiment to determine which orientation yields the least curl.
2. Try a different output paper path (if available for your printer). Using the face-up output path may yield more acceptable results than the standard face-down output bin. Note that the LJ5N, 5M, and 5 printers have no alternative output paper path. Use the LJ 6L/5L Front Output Slot and Paper Input Support if paper is curled or wrinkled.
3. Protect the paper from adverse environmental conditions prior to use. Paper designed for laser printing has an initial moisture content of 4-6 percent, which is maintained as long as the paper is stored properly. Once the paper has been removed from its packaging, it will dry out or absorb additional moisture, depending on the environment. Excess moisture in the paper will increase the amount of curl.
4. Try a different type or brand of paper. Not all paper is designed for laser printing.

Much of the paper curl that is induced by the laser printer fusing process will tend to relax within the first 24 hours following printing. However, the curl on the leading edge of the page may remain longer because the leading edge tends to remain in contact with the fusing roller for longer periods.

Consult the user guide for the printer and the *HP LaserJet Printer Family Paper Specification Guide*, for more information.

Envelope Specifications

Category	Specifications
Basis Weight	75 to 90 g/m^2 (20 to 24 lb) single layer
Caliper	3.3 to 5.5. mils (0.084 to 0.14 mm) single layer thickness
Curl	Less than 5 mm (0.2 in) curl across entire surface
Finishing	Accurate, sharply creased folds with no more than two thicknesses of paper at the leading edge
Fusing Compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200° C (392° F) for 0.1 second
Moisture Content	4% to 6% by weight
Paper	Must meet all the normal paper specifications
Smoothness	100 to 250 Sheffield

Envelope Sizes

Metric System

Size	Metric Dimensions	U.S. Dimensions
DL	110 x 220 mm	4.3 x 8.6 in
C5	162 x 229 mm	6.4 x 9.1 in
B5	176 x 250 mm	7.0 x 9.9 in

Imperial (U.S.) System

Size	Metric Dimensions	U.S. Dimensions
Commercial #10	105 x 241 mm	4.1 x 9.5 in
Monarch #7 3/4	98 x 191 mm	39 x 7.5 in

Envelopes to Avoid

Do not use the following envelopes:

- with clasps, snaps, or tie strings
- with transparent windows, holes, perforations, or cutouts
- having an open flap with adhesive exposed
- having paper, inks, adhesives, or materials that discolor, melt, offset, or release hazardous emissions when exposed to 205° C (400° F)
- having extremely smooth, shiny, rough, textured, or deeply embossed surfaces
- damaged, wrinkled, or irregularly shaped
- constructed with encapsulating adhesives that do not require moistening, but rely instead on pressure to seal them

Preventing Printer Malfunctions Caused by Envelopes

When you are printing on envelopes, use these preventive measures to avoid printer malfunctions.

- Carefully feed the envelopes into the printer.
- Be aware of the envelope's construction.

Envelope Feeding

Following these preventive measures when feed envelopes

- Envelopes can be manually fed through the printer or they can be fed automatically through an envelope tray or feeder.
- Closely inspect the leading edge of the envelopes before feeding them into the printer. Ensure the leading edge is flat. Watch for envelope curl. Flatten the leading edge of the envelope before printing.
- Be patient; in manual feed mode the printer displays a message when it is ready to accept the next envelope. Wait for this message to appear before inserting the next envelope.
- Do not allow a large quantity of envelopes to accumulate in the output bin.
- On most printers, use the rear (or front) output bin (if available) when printing envelopes. Do not use the top (face-down) output bin.

Envelope Construction

- The corner folds need to be well-creased, with no more than two thicknesses of paper.
- The envelopes must lay flat.
- The paper grain should be diagonal to the direction of the feed.
- Adhesives must meet HP specifications for fusing compatibility.
- Basis weight must not exceed 90 g/m2 (24 pounds).
- Do not use envelopes with clasps, snaps, tie strings, or windows.
- Do not use envelopes made of synthetic materials.

Label Specifications

Category	Specifications
Adhesive	Must not be on any external surfaces of the label before, during, or after printing. Label construction and die-cutting must not allow labels to peel off during transport, printing, or fusing
Caliper	Most not exceed 0.18 mm (0.007 inches)
Curl	In ream: flat within 13 mm (0.5 inches)
Finishing Precision	Cut sheet within 0.79 mm (0.031 inches) of nominal and 0.20° square
Fusing Compatibility	All adhesions, carrier sheets, top sheets, and other materials used in label construction must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset, or release hazardous emissions when heated to 200° C (392° F) for 0.1 second
Packaging	Use moisture-proof wrap to preserve properties

Preventing Printer Malfunctions Caused by Adhesive Labels

As with envelopes, prevention is the best way to avoid printer malfunctions caused by adhesive labels. To prevent paper jams and feed problems, labels must meet the following requirements:

- Be cut long grain (as opposed to short grain)
- Totally cover the carrier sheet (no spaces between labels, no removed labels)
- Contain no excessive glue. (The adhesive should be acrylic-based emulsion and should not come into direct contact with the printer.)
- Meet HP specifications for fusing compatibility
- Meet HP specifications for caliper
- Have a carrier sheet that is not too smooth
- Use the flat paper path (manual feed slot and rear, or front, face-up delivery door), which is the recommended printing method

Transparency Specifications

Category	Specifications
Caliper	3.9 to 4.3 mils (0.100 to 0.110 mm)
Cutting Angle	90° ± 0.2°
Finishing Precision	Cut sheet to within 0.8 mm (0.03 inches) of nominal and ± 0.2° of square.
Fusing Compatibility	Overhead transparency material must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset material, or release hazardous emissions when heated to 200° C (392° F) for 0.1 second

Preventing Printer Malfunctions Caused by Transparencies

To prevent printer malfunctions caused by transparencies:

- Use the straightest paper path to avoid curling and other problems.
- Use transparencies with the correct resistivity.
- Use transparencies that meet HP specifications for fusing compatibility.
- Remove each printed sheet from the tray and place it on a flat surface before printing the next sheet.

HP Paper Training Video

HP has developed a training video focusing on how paper is manufactured and how the manufacturing process relates to the use of paper in HP LaserJet printers. Part numbers are shown below.

	Part No.	Version (VHS Format)
 The Paper Video explains the manufacturing process.	5961-0711	National Standard Television Committee (NTSC) Version (U.S.)
	5961-0712	PAL Version (Europe, Asia)

6 Toner cartridge information

Overview

This chapter provides information on toner cartridges and their use. HP recommends using HP toner cartridges, which are designed specifically to enhance the output from the HP LaserJet family of printers.

Cartridge Weights/Page Counts

HP LaserJet	Product	Cartridge	Full Weight	Empty Weight	Page Count at 5% Coverage
6L, 5L	C3906A	EP-A	730 gm (25.7 oz.)	630 gm (22 oz)	2,500
5Si	C3909A	EP-W	3000 gm (106.7 oz)	2200 gm (80.5 oz)	15,000
6P, 5P	C3903A	EP-V	920 gm (32.8 oz)	740 gm (26 oz)	4,000
5	92298A	EP-E	1500 gm (52.9 oz)	1220 gm (43 oz)	6,800
4V	C3900A	EP-BII	2060 gm (72.5 oz)	1710 gm (60.2 oz)	8,100
4P, 4L	92274A	EP-P	860 gm (30.3 oz)	740 gm (26 oz)	3,350
4Plus, 4	92298A	EP-E	1500 gm (52.9 oz)	1220 gm (43 oz)	6,800
4Si, IIISi	92291A	EP-N	2050 gm (72.2 oz)	1710 gm (60.2 oz)	10,250
IIIP, IIP+, IIP	92275A	EP-L	1050 gm (37 oz)	820 gm (28.9 oz)	3,500
IIID, III, IID, II	92295A	EP-S	1360 gm (47.9 oz)	1130 gm (39.8 oz)	4,000
2686D, 2686A	92285A	EP-C	1590 gm (56 oz)	1320 gm (46.5 oz)	3,000

Potential Toner Cartridge Issues

Banding

When printing with a laser printer, the toner is applied across the page in horizontal strips. The page is moved through the printer and toner is continually applied. When printing text or black pages, a large amount of toner is deposited on the page. As the amount of toner deposited on the page decreases, slight speed variations become more apparent. As the resolution (dots per inch) and the speed (pages per minute) increase, a variation in pattern intensity may appear on the page as lines or bands.

The bands are more visible in certain grayscale patterns. High speed printers that are capable of printing high resolution grayscale patterns are more likely to display the pattern variations. Changing the grayscale pattern or reducing the resolution may significantly reduce the amount of banding that occurs.

Character Voids

Small gaps or voids may appear in some of the characters when printing on media other than standard photocopier paper. These “character voids” occur because some print media does not accept the transfer of toner as well as others.

To minimize the occurrence of character voids, avoid media with a rough finish. Use media that is within the Hewlett-Packard paper specifications listed in the user guide or the *HP LaserJet Family Paper Specification Guide*. If the finish is too rough, the surface will consist of large inconsistencies. If the finish is too smooth, toner will not adhere well. Adjusting the print density may affect the severity of character voids.

Toner Cracking

When the paper is folded and the crease aligns with a line of text, it is possible with certain types of paper for the text to break along the line, giving the appearance of a white line through the text. Papers that do not meet the smoothness (100-250 Sheffield, 100-500 Bendtsen) and/or wax pick (>11 Dennison) are likely to exhibit this effect more than others.

Toner in the HP LaserJet printers is composed of minute particles of pigmented plastic material (styrene) and iron oxide. When the toner is subjected to the fusing temperature, these individual iron-impregnated plastic particles become part of a larger plastic image on the page. When the printed page is subsequently folded, the plastic image must also give, in some fashion, to accommodate the fold. If the print image has been well-set into the paper, this resulting break in the plastic will not be apparent. However, if the toner is unable to adequately penetrate the paper fibers, or if, in the process of folding the paper, the paper fibers behind the toner break away from the page itself, the result will be a “white line” through the image. There are several ways to minimize this effect:

- Ensure that the paper being used meets ALL of the specifications provided in the *HP LaserJet Printer Family Paper Specification Guide*, in particular the smoothness and wax pick.
- A lighter density setting will ensure that the toner image will be composed of less plastic material, thus minimizing the resulting effect of trying to fold the toner image.
- For the reasons listed earlier, a more narrow character-stroke width might also help.
- Magnetic Ink Character Recognition (MICR) paper may fix toner cracking problems (see also the *HP MICR User's Guide* 5091-3857).

In xerographic (laser) printing, using paper that has a laid finish often causes problems. The surface roughness of the paper is often responsible for the problems.

Paper that is stiffer than xerographic paper also causes problems. Stiff papers do not fold well. When stiff paper is folded and a toner image is applied to the paper’s surface, the problems are even worse.

Transfer of Toner Image

After printing a document on an HP LaserJet printer, folding it, and sending it through the mail, you might observe that a portion of the print image was transferred to opposing surfaces of the folded document.

The laser printing process uses a pigmented plastic powder (toner) to form a print image that is first transferred to a sheet of paper (or other print medium) and then melted (fused) onto the surface of the paper to form a permanent image. Although paper is usually thought of as being soft, it is actually quite abrasive. When the printed page is folded, movement under pressure between a paper surface and the toner image may cause the paper to abrade (scratch) the toner, causing a transfer of the toner material onto the opposing surface of the paper. This can be demonstrated by rubbing a print image against (or into) a clean sheet of paper.

Some machinery, such as that used by the U.S. Postal Service to sort mail, can apply the necessary pressure and agitation to cause this phenomenon of toner image transfer.

To minimize this effect:

- Reduce the amount (or height) of toner used to produce the print image.
- Use a paper that is less abrasive.
- Ensure optimal fusing of the toner (print) image to the paper.

The **amount** of toner used to produce a print image is controlled by the print density dial, slide, or control panel settings in the HP LaserJet printers. The print density should be adjusted for a **lighter** image to reduce the amount (height) of toner prone to abrasive transfer.

The HP LaserJet printers have been designed for optimum results with xerographic (laser) bond papers, such as XEROX 4024 photocopy paper. The properties of this type of paper (for example, surface roughness, composition, moisture content) are such that the other causes of potential toner transfer are minimized. Photocopy papers are typically less abrasive than other types of paper (such as writing bond) and are also formulated to ensure optimal fusing of the toner image. Using other types of paper will generally yield less than optimal results in laser printers. For help in selecting paper suitable for use in the

HP LaserJet printers, refer to the *HP LaserJet Printer Family Paper Specification Guide*. This guide can be ordered by calling HP Parts Direct at 800-227-8164 in the U.S., or HP Distribution at 970-339-7009.

Because of the way that laser printing is accomplished, currently there is no way to entirely eliminate the possibility of toner transfer. However, using these techniques should yield more satisfactory results and will often reduce the problem to imperceptible levels.

Gray Background on Envelopes

Poor print quality is normally the result of using envelopes that are of the incorrect weight or finish. The paper used to construct the envelope may be embossed; or may be too heavy, too rough, or too slick; or may be made in such a way that it is incompatible with the high temperatures encountered in toner fusing. The result is that the toner does not adhere well to the surface. Also, on heavier envelopes, a gray background may appear on the front (or print side) of the envelope. To reduce the gray background, the print density may need to be set to a darker setting. (On the LaserJet 5, “5” is the darkest setting and “1” is the lightest.)

HP PLANET PARTNERS

The U. S., Canada, Europe, and Australia now have HP toner cartridge recycling programs. The used toner cartridge should be placed in the wrapper and box that held the new cartridge and sent back for recycling.

U.S.

A brochure explaining the recycling program in the U.S., part number 5091-1325EUS, can be ordered. The customer returns used toner cartridges via UPS at no cost to the customer, using shipping labels included in the brochure. The toner cartridges can be shipped one at a time or in volume shipments. Some of the parts are recycled to make new cartridges. Other parts are melted for re-use as raw materials. If the customer has any questions, and to receive the free recycling brochure, refer them to the Customer Information Center at (800) 752-0900.

AUSTRALIA

Australian customers can send their toner cartridges to their local HP dealer. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

EUROPE

The recycling program in Europe currently includes these countries: Germany, Switzerland, Austria, United Kingdom, the Netherlands, and Sweden. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

CANADA

Canada uses Federal Express for their recycling program. At least eight but no more than 40 Toner Cartridges can be shipped at one time. Shipments of fewer than eight cartridges are at the shipper's expense. Call Federal Express at (800) GoFedEx; (800) 463-3339 to arrange for free pickup of the bundled cartridges. Fill out a Federal Express Waybill or obtain a preprinted one from your dealer.

In Alberta, B.C., Manitoba, NWT, Saskatchewan, and the Yukon, send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6551 Westminister Hwy, Unit 160
Richmond, B.C. V7C 4V4
Acct. No.: 1246-1740-5

In the Atlantic provinces, Ontario, and Quebec send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6600 Goreway Drive, Unit C
Mississauga, Ontario L4V 1S6
Acct. No.: 1246-1740-5

For more information, call: Canada wide: (800) 387-3867, Dept. 129; Toronto: (800) 678-9430, Ext. 4981

Note

Recycling information is now also included in the toner cartridge package.

For additional information about HP corporate-wide, environmental policies, practices, and awards, visit **www.hp.com**.

Refill Statement

Hewlett-Packard toner cartridges have been designed to maximize the reliability of the HP LaserJet printer by including all of the components that need frequent replacement or adjustment within the cartridge. While we recognize that all parts of this critical printer mechanism will not wear consistently, the HP toner cartridge has been designed to optimize the exceptional print quality that is synonymous with the HP LaserJet printer name. While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or under a maintenance contract, we also do not recommend their use for the following reasons:

1. The HP LaserJet toner cartridge is not designed to be refilled or remanufactured.
2. Hewlett-Packard has no control or process to ensure that a refilled toner cartridge will function at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict what the long-term effect on the printer's reliability could be from using different toner formulations found in refilled cartridges. Because the HP LaserJet printer has the highest reliability reputation in the industry, we are concerned about any usage that might affect this reputation.
3. Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge. The print quality of the HP LaserJet toner cartridge directly influences the customer's perception of the HP LaserJet printer itself. The high print quality of the HP LaserJet printer is one of the primary reasons for the success of the product and we are keenly interested in maintaining that image.

The entire family of HP LaserJet printers is covered under a standard one-year warranty from the date of purchase. Hewlett-Packard offers optional maintenance contracts after the one-year warranty expires. The use of refilled toner cartridges alone does not affect either the warranty or any maintenance contract purchased from HP. **However, if an HP LaserJet printer failure or damage is found to be directly attributed to the use of a refilled toner cartridge, the repair will not be covered under the warranty or by the maintenance contract**. Rather, standard time and material charges will be applied to service the printer for that particular failure or damage.

Hewlett-Packard is constantly striving to provide the highest quality printer products possible. The HP LaserJet printer family was designed for optimum output performance when the printing mechanism is periodically replaced with a new HP toner cartridge. The HP toner cartridge is designed specifically to enhance the output from the HP LaserJet family of printers. We know that the highest quality print results will be obtained when new HP toner cartridges are used with HP LaserJet printers.

7 Printer options and user replaceable parts

Overview

The following tables list the product, product number, product description, and service part number for each printer. Parts can be ordered through HP Parts Direct Ordering at (800) 227-8164 (U.S. only). For additional product support, see the inside back cover.

Product	Product Number	Product Description	Service Part Number
Memory	C2963A	1 MB SIMM 36 Bit	C2063A
	C2064A	2 MB SIMM 36 Bit	C2064A
	C2065A	4 MB SIMM 36 Bit	C2065A
	C2066A	8 MB SIMM 36 Bit (IIISi S/N 3200 & up)	C2066A
	C3130A	1 MB SIMM 32 Bit	C3130-60001
	C3131A	2 MB SIMM 32 Bit	C3131-69991
	C3132A	4 MB SIMM 32 Bit	C3132-60001
	C3133A	8 MB SIMM 32 Bit	C3133-60001
	C3146A	16 MB SIMM 32 Bit	C3146A
	C3838A	1 MB JEIDA	C3838A
	C3938A	2 MB JEIDA	C3938A
	C3148A	4 MB JEIDA	C3148A
	C3930A	2 MB FLASH SIMM	C39301A
	C3931A	4 MB FLASH SIMM	C3931A
Language Emulation	C3152A	PostScript Level 2 SIMM	C3152-69001*
	C3169A	PostScript Level 2 SIMM	C3169A-69001*
	C3918A	PostScript Level 2 SIMM	C3918-69001*
	C3987A	PostScript Level 2 SIMM	C3987-96001*
Boards I/O	J2550A	JetDirect Card for Ethernet/10Base-T	J2550-69001*
	J2552A	JetDirect Card for 10Base-T/BNC/Ltalk	J2552-69001*
	J2555	JetDirect Card for Token Ring	J2555-69002*
	J2374C	JetDirect Network Software/HP-UX	N/A
	J2375C	JetDirect Network Software/Sun Unix	N/A
	J2382A/B	JetDirect EX for Ethernet/10Base-T/BNC	J2382-69003*
	J2591A	JetDirect EX for Ethernet/10Base-T/BNC	J2591A
Envelope Feeder	C3927A	Envelope Feeder	C3927-69001*
	C3765A	Envelope Feeder	C3765-60501*
Duplex	C3720A	Duplexer Upgrade	
	C3762A	Duplexer Upgrade	C3762-60501
Service Maintenance and PM Kits	C3971A	Service Maintenance Kit with 110V fuser	C3971-69001*
	C3972A	Service Maintenance Kit with 110V fuser	C3972-69001*
		Service Maintenance Kit with 110V fuser	C3916-69001*
		Service Maintenance Kit with 110V fuser	C3916-69002*
Cleaning Tool		5P Cleaning Brush	RF5-0593-000CN
Disk Drive	C2965A	Disk Drive	C2965-69001*
Sheet Feeder/ Stacker	C3763A	2000 Sheet Input (Tray 4)	C3763-69501*

*Rebuilt part, requires exchange

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Product	Product or Part Number	Product Description
Paper Trays	R75-4000-000CN	Universal Paper Cassette
	C3921A	Optional Lower Cassette w/Tray 3
	C3924A	250 Sheet Universal Cassette
	R77-0004-000CN	Tray 2
	R77-0003-000CN	Tray 3
	R98-4000-000CN	Universal Paper Cassette
I/O Cables	C2950A	Parallel IEEE-1284 compliant A to B (2.0m)
	C2951A	Parallel IEEE-1284 compliant A to B (3.0m)
	C2946A	Parallel IEEE-1284 compliant A to C (3.0m)
	C2947A	Parallel IEEE-1284 compliant A to C (10.0m)
	C2933A	Serial 25-pin-F/9 pin-M
	C2932A	Serial 9-pin-F/9 pin-M
Toner	92298A	HP Toner Cartridge
	C3903A	HP Toner Cartridge
	C3906A	HP Toner Cartridge
	C3909A	HP Toner Cartridge

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Product	Product Number	Product Description	Service Part Number
	33443A**	1 MB Board (Revision A)	33443-69001*
	33443B**	1 MB Board (Revision B)	33443-69004*
	33444A/B**	2 MB Board	33444-69012*
	33445A/B**	4 MB Board	33445-69012*
	33474A**	1 MB Board (replaced by Revision B)	33474-69004*
	33475A**	2 MB Board (replaced by Revision B)	33475-69011*
	33474B	1 MB Board	33474-69004*
	33475B	2 MB Board	33475-69011*
	C2024A	1 MB Memory Upgrade	C2024-69001*
Memory	C2063A	1 MB SIMM 36 Bit	C2063A
	C2064A	2 MB SIMM 36 Bit	C2064A
	C2065A	4 MB SIMM 36 Bit	C2065A
	C2066A	8 MB SIMM 36 Bit (IIISI S/N 3200 & up)	C2066A
	C3130A	1 MB SIMM 32 Bit	C3130-60001
	C3131A	2 MB SIMM 32 Bit	C3131-60001
	C3132A	4 MB SIMM 32 Bit	C3132-60001
	C3133A	8 MB SIMM 32 Bit	C3133-60001
	C3146A	16 MB SIMM 32 Bit	C3146A
	33438P**	PostScript cartridge	
	33439P**	PostScript cartridge	33439-69001*
	33439Q**	PostScript cartridge	33439-69001*
	33494B**	PS Level 1 ROM (IIISi S/N 3199 & lower)	3349469002*
	33484C**	PS Level 1 SIMM (IIISi S/N 3200 & later)	33494-69004*
	33494D**	PS Level 2 ROM (IIISi S/N 3199 & lower)	33494-69007*
	33494E**	PS Level 2 SIMM (IIISi S/N 3200 & later)	33494-49008*
Language	C2013A	PostScript Level 2 SIMM (4Si)	C2013-69001*
Emulation	C2049A**	PostScript SIMM	C2049-67901
	C2080A	PostScript SIMM	C2080-69001*
	C3159A	PostScript SIMM	C3159-69001*
	C3129A	PostScript SIMM	C3129-69001*
	33498A**	Epson/IBM ProPrinter cartridge	33498-67901
	C2081A**	Epson/IBM ProPrinter Emulated SIMM	n/a
	C2088A**	PCL 5 cartridge	C2088-60101
	C2089A**	PostScript cartridge Plus	C2089-69001*

*Requires exchange. ** No longer available.

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Product	Product Number	Product Description	Service Part Number
	33416B**	AppleTalk	33416-67901
	33417C*	AppleTalk	33417-67901
	26013A*	Status Readback card	26013-60001
	C2059A**	Novell Ethernet MIO	28636-69001*
	C2059B**	LAN Server/LAN Manager 802.3	28636-69101*
	C2059C**	Novell Token Ring MIO	28637-69001*
	C2059D**	LAN Server/LAN Manager Token Ring	28637-69201*
	C2059E**	EtherTalk MIO	28636-69301*
	C2059F*	LocalTalk MIO	J2341-69001*
	C2059H*	MPE ESC? MIO card for the HP 3000	28644-60101
	C2059T*	TCP/IP Ethernet	28636-69401*
	J2337A**	Ethernet/802.3 (BNC/RJ-45) Novell	J2337-69001*
	J2338A**	802.3 (BNC/RJ-45) LAN Srvr/LAN Mgr	J2338-69001*
	J2339A**	EtherTalk (BNC/RJ-45) Apple	J2339-69001*
	J23401**	TCP/IP Ethernet (BNC/RJ-45) Unix	J2340-69001*
	J2341B**	LocalTalk (DIN-8)	J2341-69001*
	92270N**	RS-422-A Serial Adapter for LJ IIIP	N/A
Boards	C2071A	Novell/Ethernet/802.3; BNC	27303-69001*
I/O	C2071B	Novell/Ethernet/802.3; RJ45 port	27305-69001*
	C2071C	LAN Manager/Ethernet/802.3 BNC	27303-69101*
	C2071D	LAN Manager/Ethernet/802.3; RJ45	27305-69101*
	C2071E	Novell/Token Ring/802.5	27304-69001*
	C2071F	LAN Manager/Token Ring/ 802.5	27304-69201*
	C2071S	HP JetDirect Card for UNIX/10Base-T	27305-69401*
	C2071T	HP JetDirect Card for UNIX/ThinLan	27303-69401*
	J2371A**	JetDirect Card for Ethernet/Base-T	J2371-69001*
	J2372A**	JetDirect Card for Ethernet/10Base-T/ BNC	J2372-69001*
	J2373A**	JetDirect Card for Token Ring	J2373-69001*
	J2550A	JetDirect Card for Ethernet/10Base-T	J2550-69001*
	J2552A	JetDirect Card for 10Base-T/BNC/Ltalk	J2552-69001*
	J2555A	JetDirect Card for Token Ring	J2555-69002*
	J2374C	JetDirect Network Software/HP-UX	N/A
	J2375C	JetDirect Network Software/Sun Unix	N/A
	J2382A/B	JetDirect EX for Ethernet/10Base/T/ BNC	J2382-69003*
	J2383B	JetDirect EX for Token Ring	J2383-69005*

*Requires exchange. **No longer available**.**

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Product	Product Number	Product Description	Service Part Number
Envelope Feeder	33457A**	50 envelope power feeder	33457-69001*
	33458A**	50 envelope power feeder	33458-69001*
	C2060A	100 envelope power feeder	C2060-69001*
	C2082A**	75 envelope power feeder	C2082-69001*
	C2082B	75 envelope power feeder	C2082-69001*
		Separation Pad for IID Env. Feeder	RF1-2660-000CN
		Paper Tray Lid for Envelope Feeder	RG1-2802-000CN
Duplex	C2061A	Duplexer Upgrade	C2061-69001*
	C3157A	Duplexer Upgrade	
Service Maintenance PM Kits		Service Maintenance Kit with 115V fuser	33449-69007*
		Service Maintenance Kit with 240V fuser	33449-69008*
		Service Maintenance Kit with 110V fuser	C2001-69012*
		Service Maintenance Kit with 240V fuser	C-2001-69013*
	C2062A	110V User Maintenance Kit	C2062-69001*
	C2087A	220V PM Kit	C2087-69001*
		Service Maintenance Kit with 110V fuser	C2037-69010*
		Service Maintenance Kit with 240V fuser	C2037-69011*
		Service Maintenance Kit with 110V fuser	33481-69007*
		Service Maintenance Kit with 110V fuser	C1341-69010*
		Service Maintenance Kit with 220V fuser	C1341-69011*
Power Cord		Right Angle 110V power cord	8120-6177
Cleaning Tool		Velcro adhesive cleaning brush holder	RB1-3389-000CN
		Cleaning brush	RF5-0690-000CN
		Cleaning brush	FB1-0733-000CN
Disk Drive	C3295A	Disk Drive	C3295-69101
Sheet Feeder/ Stacker	C2921A	1500 Sheet Feeder (Letter)	C2921-63001
	C2920A	1500 Sheet Feeder (A4)	C2920-63001
	C2810A	2000 Sheet Output Stacker	

*Requires exchange. **No longer available.

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Product	Product or Part #	Product Description
Paper Trays	33472A**	Optional Lower Cassette with letter tray 92275B
	33472A/B**	Optional Lower Cassette with A4 tray 92275D
	92275B	Letter-size tray (8.5 x 11 in)
	92275C	Legal-size tray (8.5 x 14 in)
	92275D	A4-size tray (210 x 297 mm)
	92275E	Executive-size tray (7.25 x 10.5 in)
	92275F	Envelope tray (Com-10, Monarch, DL, C5)
	92295B**	Letter-size tray (8.5 x 11 in)
	92295C**	Legal-size tray (8.5 x 14 in)
	92295D**	A-4 size tray (210 x 297 mm)
	92295E**	Executive-size tray (7.25 x 10.5 in)
	92295F**	Envelope tray (Com-10, Monarch, DL, C5)
	92297B	Letter-size tray (8.5 x 11 in)
	92297C	Legal-size tray (8.5 x 14 in)
	92297D	A-4 size tray (210 x 297 mm)
	92297E	Executive-size tray (7.25 x 10.5 in)
	92297F	Envelope tray (Com-10, Monarch, DL, C5)
	92291B	Letter-size tray (8.5 x 11 in)
	92291C	Legal-size tray (8.5 x 14 in)
	92291D	A-4 size tray (210 x 297 mm)
	92291E	Executive-size tray (7.25 x 10.5 in)
	C2083A**	Optional Lower Cassette with C2084A tray
	C2083B**	Optional Lower Cassette with C2084B tray
	C2083D	Optional Universal Lower Cassette
	C3160A	250 Sheet Cassette (Letter/A4)
	C3161A	250 Sheet Cassette (11x17/A3)
	C3760A	Optional Lower Cassette and Base (500 sheet)
	C2084A	Universal LC tray--all paper except Legal (500 sheet)
	C2084B**	Universal LC tray—all paper except Legal (250-sht)
	C2085A	Universal PC tray—all paper except Legal (250-sht)
	C2085B	PC tray—letter only (250 sheet)
	C2085C	PC tray—A4 only (250 sheet)
	C2085D	250 Sheet Universal Cassette
	R75-0010-000CN	Universal Paper Cassette
	R752010-000CN	Universal Paper Cassette
Paper Tray Replace-ment Top Cover	92295R	For 92295 B/D/E
	92295S	For 92295C
	92295U	For use with 33457A envelope feeder
	92297R	For 92297 B/D/E
	92297S	For 92297C

*Requires Exchange. **No longer available.

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Product	Product or Part Number	Product Description
I/O Cables	92284A**	Parallel 25 pin-M/36 pin-M 2.13 m (7.0 ft)--most PCs
	24542D**	Parallel 25 pin-M/36 pin-M 3.0 m (9.9 ft)
	C2950A	Parallel IEEE-1284 compliant A to B (2.0 m)
	C2951A	Parallel IEEE-1284 compliant A to B (3.0 m)
	C2913A	Serial 25 pin-F/25 pin-M 1.2 m (3.9 ft)
	92219J**	Serial 9 pin-F/25 pin-M 5.0 m (16.7 ft)
	24542G	Serial 9 pin-F/25 pin-M 3.0 m (9.9 ft) (for most PCs)
	92215S	Serial, DIN8 2.0 m (6.6 ft) for Apple Macintosh
	92215N	Phone NET or LocalTalk, Macintosh Network Cable Kit
	C2933A	Serial 25 pin-F/9 pin-M
	C2932A	Serial 9 pin-F/9 pin-M
	92275A	HP Toner Cartridge
	92285A	HP Toner Cartridge (2686A, 2686D)
	92295A	HP Toner Cartridge
	92291A	HP Toner Cartridge
	92298A	HP Toner Cartridge
	92274A	HP Toner Cartridge
	C3900A	HP Toner Cartridge

*Requires exchange. **No longer available.

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8 Service parts

Overview

This chapter provides a list of the hardware found in HP LaserJet printers. In the following tables, the shaded areas refer to the location of the part in the printer, as shown in the corresponding illustration. The tables also provide the part or product number and a description.

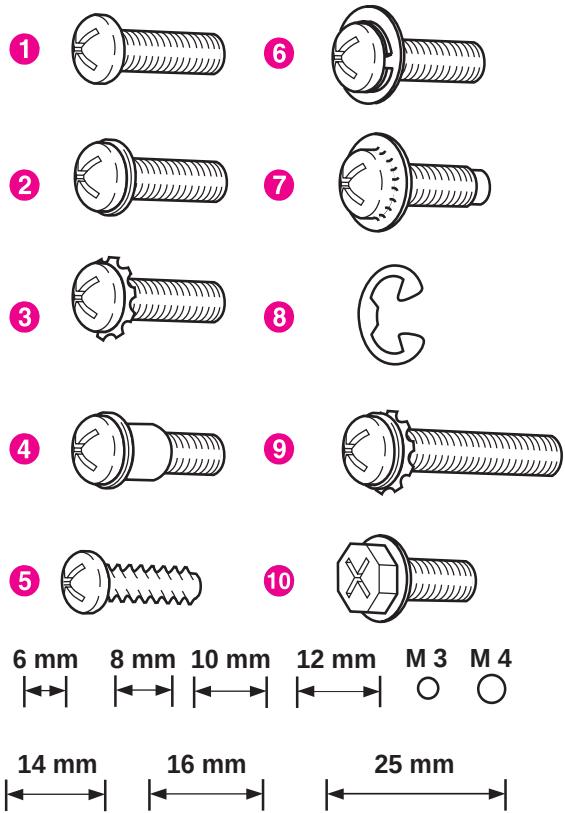


Figure 8-1 **Common Hardware**

Common Hardware

1	XB1-2300-606CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-507CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-607CN	BH3 x 6mm	Pan-head Phillips
1	0515-1895	M3 x 8mm	Pan-head Phillips
1	XB1-2301-407CN	M4 x 14mm	Pan-head Phillips
1	XB1-2400-606CN	M4 x 6mm	Pan-head Phillips
1	XB1-2400-809CN	M4 x 8mm	Pan-head Phillips
1	0515-1912	M4 x 8mm	Pan-head Phillips
1	XB1-1300-807CN	M3 x 8 mm	Pan-head Phillips
2	XA9-0434-000CN	M3 x 4mm	Washer-head Phillips
2	XA9-0267-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0253-000CN	M3 x 8mm	Washer-head Phillips
2	XA9-0542-000CN	M3 x 10mm	Washer-head Phillips
2	XA9-0540-000CN	M4 x 8mm	Washer-head Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0389-000CN	M3 x 8mm	Star-washer Phillips
3	XA9-0654-000CN	M3 x 10mm	Star-washer Phillips
3	XA9-0192-000CN	M4 x 6mm	Star-washer Phillips
3	XA9-0828-000CN	M3 x 6mm	Star-washer Phillips
4	RBI-5552-000CN	M3	Shoulder Screw Phillips
4	RAI-7636-000CN	M3	Shoulder Screw Phillips
4	RBI-5489-000CN	M3 x 4mm	Shoulder Screw Phillips
4	XA9-0342-000CN	M3 x 8mm	Shoulder Screw Phillips
5	XB4-7300-609CN	M3 x 6mm	Self-tapping Phillips
5	XB4-7400-809CN	M4 x 8mm	Self-tapping Phillips
5	XB4-7401-009CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-007CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-209CN	M4 x 12mm	Self-tapping Phillips
5	XB6-7300-607CN	M3 x 6mm	Self-tapping Phillips

Common Hardware continued

6	XA9-0253-000CN	M3 x 8mm	Loose Flat/Lock Washer Phillips
6	XA9-0584-000CN	M3 x 12mm	Loose Flat/Lock Washer Phillips
7	FA9-1449-000CN		Star-washer trus-head Phillips
7	XB1-2302-507CN	M3 x 25mm	Trus-head Phillips
7	XB6-7300-809CN	M3 x 8mm	Trus-head Phillips
7	XA9-0326-000CN	M3 x 4mm	Trus-head Phillips
7	XB6-7300-807CN	M3 x 8mm	Trus-head Phillips
8	XD2-1100-242CN	2.4mm	Retaining Ring (e-type)
8	XD2-1100-322CN	3.2mm	Retaining Ring (e-type)
8	XD2-1100-402CN	4.0mm	Retaining Ring (e-type)
8	XD2-1100-502CN	5.0mm	Retaining Ring (e-type)
8	XD2-1100-642CN	6.4mm	Retaining Ring (e-type)
8	XG9-0260-000CN		Retaining Ring (e-type)
8	XD2-2300-507CN	5.0mm	Grip Ring (c-type)
9	XA9-0375-000CN	3m x 25 mm	Loose Flat/Star Washer Phillips
10	XA9-0686-000CN	M3 x 6mm	Hexhead Screw
10	XA9-0724-000CN	M3 x 8 mm	Hexhead Screw
10	XA9-0824-000CN	M3 x 10mm	Hexhead Screw
10	XA9-0813-000CN	M3 x 8mm	Hexhead Screw with washer

J 6L, 5L Parts

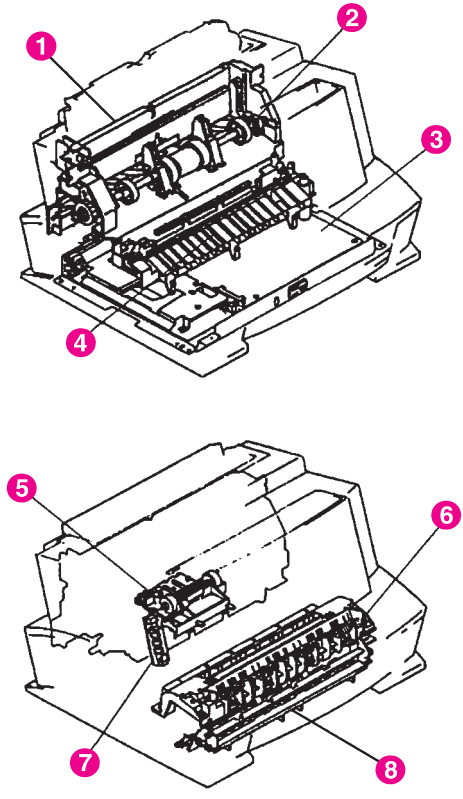


Figure 8-2 **LJ 6L, 5L Parts**

LJ 6L, 5L Parts (See figure 8-2)		
1	RB1-7177-000CN	Paper Feed Frame
2	RG5-1940-000CN 5L RG5-3486-000CN 6L	Pick-up Roller Assembly
3	C3941-69001 5L RG5-3506-000CN 6L	DC Controller PCA, exchange (110V)
3	C3941-69002 5L RG5-3509-000CN 6L	DC Controller PCA, exchange (220V)
4	RF5-1534-000CN	Transfer Roller
4	RF5-1530-000CN 5L RF5-2358-000CN 6L	Transfer Roller Guide
5	RG5-1942-000CN 5L RG5-3485-000CN 6L	Feed Assembly
6	RG5-2012-000CN 5L RG5-3474-000CN 6L	Delivery Assembly
7	RG5-2028-000CN	Control Panel PCA
8	RG5-2013-000CN 5L RG5-3475-000CN 6L	Separation Guide Assembly
	C3942-67902 5L C3991-60001 6L	Formatter (new)
	C3942-69002 5L	Formatter (exchange)
	RG5-1964-000CN 5L RG5-3459-000CN 6L	Heating Element (110V)
	RG5-1965-000CN 5L RG5-3463-000CN 6L	Heating Element (220V)
	RH7-1282-000CN 5L RH7-1320-000CN 6L	Main Motor

LJ 6L, 5L Parts (continued) (See figure 8-2)		
	RF5-1516-000CN 5L RF5-2362-000CN 6L	Pressure Roller
	RG5-2000-000CN 5L RG5-3494-000CN 6L	Laser Scanner (new)
	C3941-69003 5L	Laser Scanner (exchange)
	RY7-5005-000CN	Gear Kit #1
	RY7-5006-000CN 5L RY7-5036-000CN 6L	Gear Kit #2
	RY7-5007-000CN	Fuser Release Kit
	RY7-5008-000CN	Separation Pad Kit
	RY7-5009-000CN	Input Sensor Arm Kit
	RG5-2029-000CN	Paper Pickup Cable
	RG5-2031-000CN 5L RG5-3662-000CN 6L	Door Sensor Cable
	RG5-2032-000CN	Thermistor Cable
	RG5-2033-000CN	Motor Cable
	Rg5-2034-000CN 5L RG5-3661-000CN 6L	Scanner Cable
	RG5-2035-000CN 5L	Laser Cable
	RG5-2036-000CN 5L RG5-3499-000CN 6L	Control Panel Cable
	RG5-2037-000CN 5L	Door Switch Cable

LJ 5Si Mopier Paper Handling

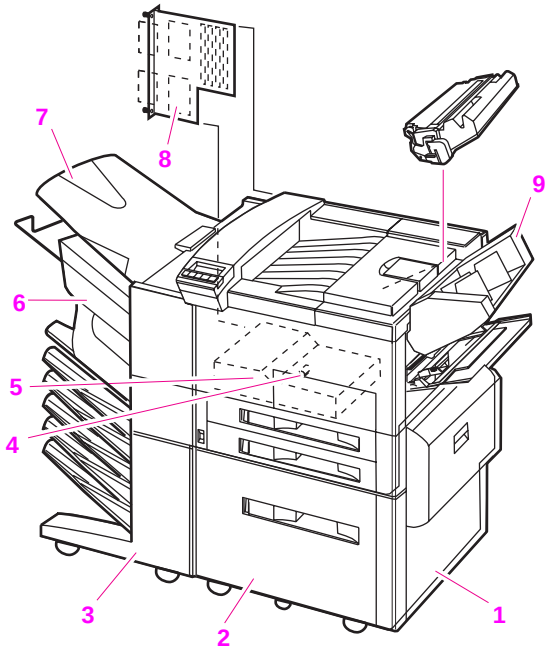


Figure 8-3 **LJ 5Si Mopier Paper Handling Components**

LJ 5Si Mopier Paper Handling Components		
1	C3763A C3763-69501	2000 Sheet Input Unit Assembly (exchange)
2	RG5-2155-000CN	Tray 4 Assembly
3	C3764-69100	Multi-Bin Mailbox (exchange)
3	C3766-69515	Mailbox with Stapler (exchange)
4	RB1-6822-000CN	Duplex Unit Roller 1
5	C3762-60501	Duplex Unit
6	C3766-69500	Stapling Unit (exchange)
7	RB1-6491-000CN	Face Up Bin
8	C3764-60504	External Paper Handling PCA (Multi-Bin Mailbox)
8	C40776-60500	External Paper Handling PCA (Mailbox with Stapler)
9	C3765-60501	Envelope Feeder
	C3764-7000	C-Link Cable (178 cm)
	C3763-7000	C-Link Cable (61 cm)
	C3766-60512	C-Link Cable (97 cm)
	C4077-60102	3-Way Power Adaptor

LJ 5Si Parts

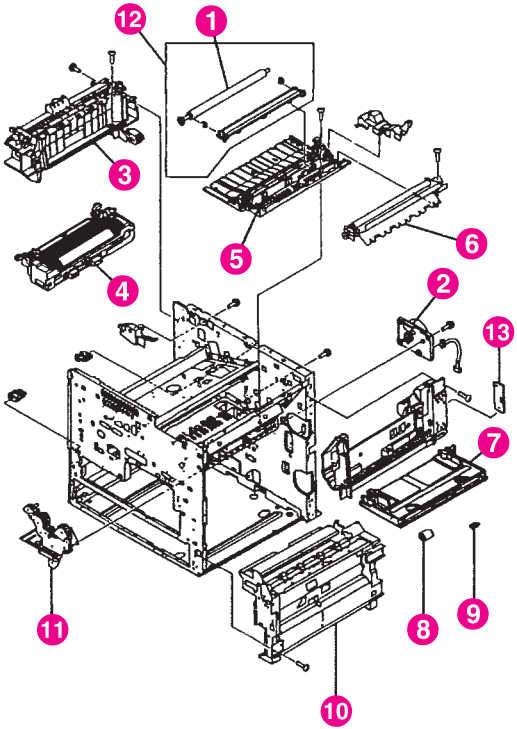


Figure 8-4 **LJ 5Si Parts**

LJ 5Si Parts		
1	RF5-1412-000CN	Transfer Roller
2	RH7-1260-000CN	Main Motor
3	RG5-1874-000CN	Face-Down Delivery Assembly
4	C3166-69012	Fusing Assembly 100-120V, exchange
4	C3166-69013	Fusing Assembly 220-240V, exchange
5	RG5-1834-000CN	Feeder Assembly
6	RG5-1833-000CN	Registration Assembly
7	RG5-1880-100CN	Tray 1 Pick Up Assembly
8	RB1-6730-000CN	Tray 1 Feed Roller
9	RF5-1455-000CN	Tray 1 Separation Pad
10	C3166-69011	Paper Input Unit (PIU), exchange
11	RG5-1847-000CN	Main Gear Assembly
12	RG5-1887-000CN	Transfer Roller Assembly
13	RG5-1884-000CN	Tray 1 PCA

LJ 5Si Parts

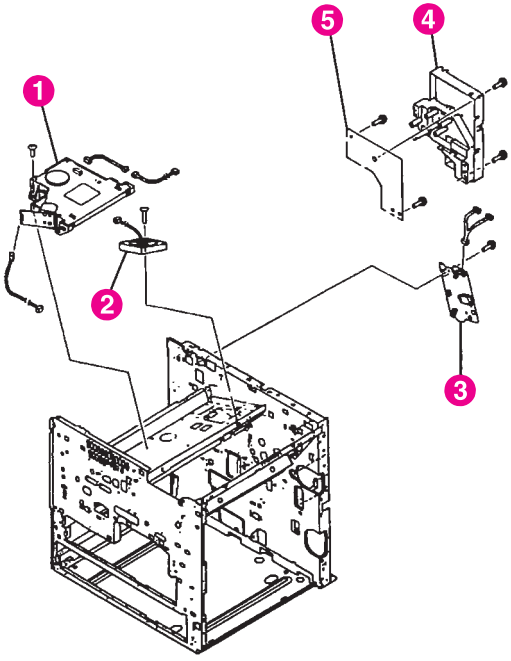


Figure 8-5 **LJ 5 Si Parts**

LJ5 Si Parts		
1	C3166-69006	Laser Scanner Assembly, exchange
2	RH7-1266-000CN	Fan 1
3	RG5-1846-000CN	Switch/Sensor PCA
4	C3166-69005	High Voltage Power Supply, exchange
5	C3166-69010	DC Controller PCA, exchange
	RG5-2433-000CN	Front Panel (Control Panel Display) not shown

LJ 5Si Parts

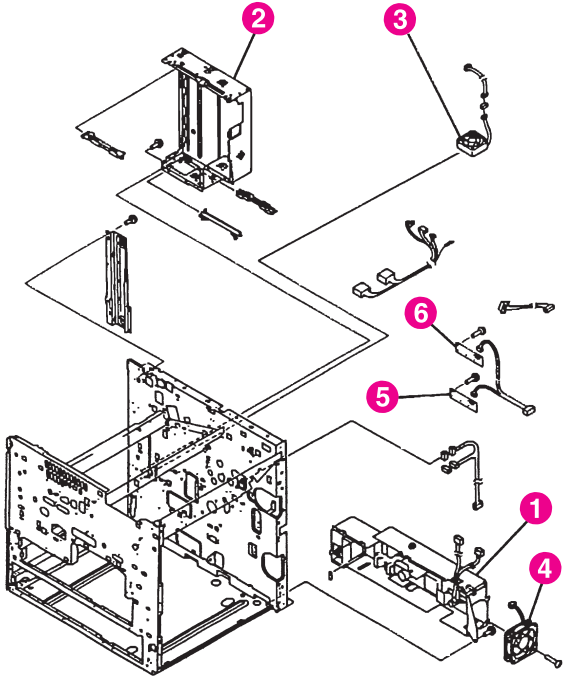


Figure 8-6 **LJ 5Si Parts**

LJ 5Si Parts		
1	C3166-69007	Low Voltage Power Supply, 110-120, exchange
1	C3166-69008	Low Voltage Power Supply, Universal, exchange
2	C3168-69005	Formatter, exchange
3	RH7-1271-000CN	Fan 3
4	RH7-1266-000CN	Fan 2
5 & 6	RG5-1845-000CN	Paper-Size Sensing PCA, Trays 2 and 3

LJ 6P, 5P Parts

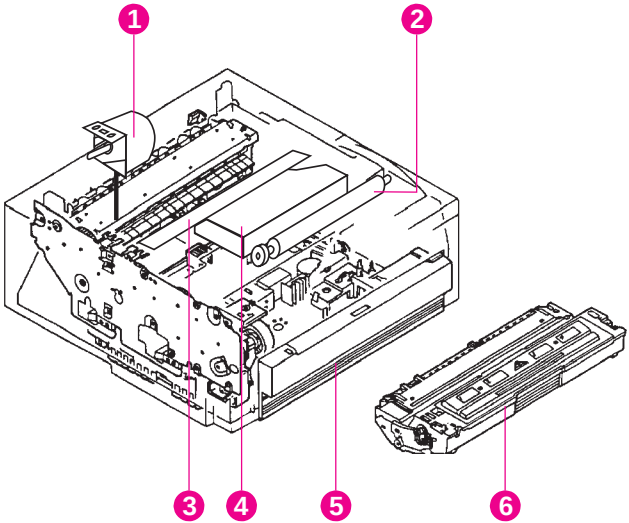


Figure 8-7 **LJ 6P, 5P Parts**

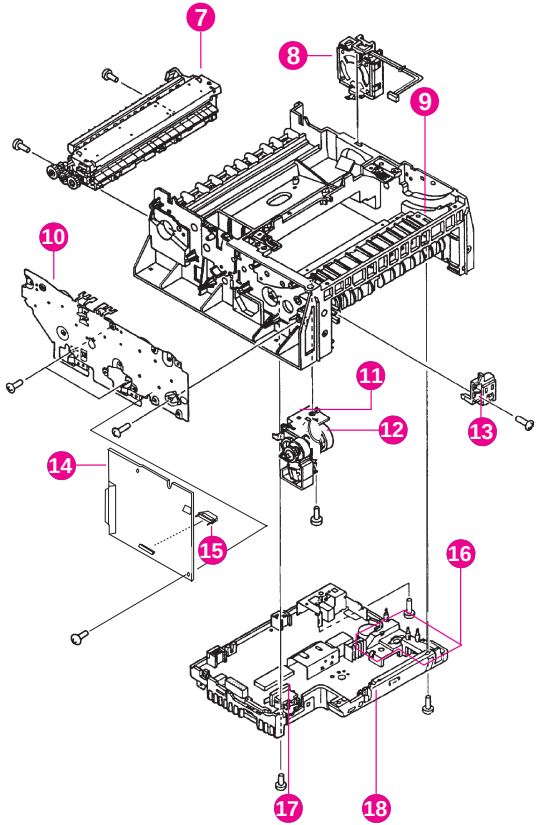


Figure 8-8 **LJ 6P, 5P Parts (continued)**

LJ 6P, 5P Parts (See figures 8-7 and 8-8)		
1	RG5-1799-000CN 5P RG5-2786-000CN 6P	Motor Assembly Motor Assembly
2	RF5-1290-000CN 5P RF5-0596-000CN 6P	Transfer Roller Assembly Transfer Roller Assembly
3	RG5-1786-000CN	Mirror Assembly
4	C3150-69005* 5P C3980-69005* 6P	Laser Scanner Assembly (exchange) Laser Scanner Assembly (exchange)
5	R75-4000-000CN 5P R98-1001-000CN 6P	Complete Tray 2 Assembly Complete Tray 2 Assembly
6	C3903A	Toner Cartridge
7	C3150-69003* 5P C3150-69004* 5P C3980-69003* 6P C3980-69004* 6P	Complete Fuser Assembly (100-120V)(exchange) Complete Fuser Assembly (220-240V)(exchange) Complete Fuser Assembly (100-120V)(exchange) Complete Fuser Assembly (220-240V)(exchange)
8	RG5-1801-000CN 5P RG5-2776-000CN 6P	Fan Assembly Fan Assembly
9	RG5-1698-000CN RF5-1283-000CN	Top Oblique Roller Assembly Static Charge Eliminator
10	RG5-1713-000CN 5P RG5-2778-000CN 6P	Gear Train Assembly Gear Train Assembly
11	RG5-1692-000CN 5P RG5-2796-000CN 6P RG5-1693-000CN 5P RG5-2790-000CN 6P	Pickup Assembly (Tray 2) Pickup Assembly (Tray 2) Complete Tray 1 Pickup Assembly Complete Tray 1 Pickup Assembly
12	RB1-6332-000CN	Pickup Roller (Tray 2)

LJ 6P, 5P Parts (continued) (See figures 8-7 and 8-8)		
13	RB1-2205-000CN	Tray 1 Roller
14	C3151-69001* 5P C3981-69001* 6P	Formatter PCA (exchange) Formatter PCA (exchange)
15	1252-5460	Formatter to Controller PCA Connector
16	RG5-1719-000Cn	High-voltage Connector Assembly
17	RH7-1258-000CN 5P RH7-5160-000C 6P	Tray 1 Solenoid (SL2) Tray 1 Solenoid (SL2)
18	C3150-69001* 5P C3150-69002* 5P C3980-69001* 6P C3980-69002* 6P	DC Controller PCA (110-120V) (exchange) DC Controller PCA (220-240V) (exchange) DC Controller PCA (110-120V) (exchange) DC Controller PCA (220-240V) (exchange)
	RG5-1702-000CN 5P RG5-1703-000CN 5P RG5-2802-000CN 6P RG5-2803-000CN 6P RG5-1801-000CN 5P RG5-2776-000CN 6P RG5-0593-000CN RB1-5939-000CN 5062-4661	Hot Roller 120V Hot Roller 220V Hot Roller 120V Hot Roller 220V Fan Fan Brush, Mirror Sensor Arm, Tray 1 Infrared Communication Test Tool

*Rebuilt part, requires exchange
**Cover assembly does not include items 3, 5, and 6.

LJ 5 Parts

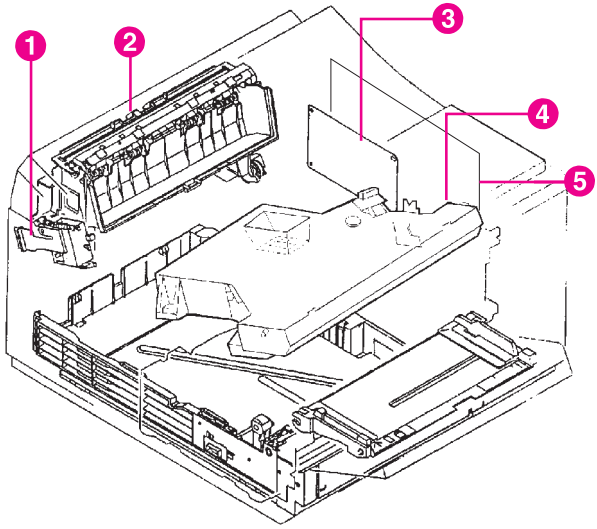


Figure 8-9 **LJ5 Parts**

LJ 5 Parts		
1	RG5-0475-060CN	Paper Output Sensor Assembly
2	RG5-2189-000CN	Paper Output Assembly
3	C2037-69004*	DC Controller PCA
4	C2037-69008*	Laser Scanner Assembly
5	C3919-69001*	Formatter PCA
	RB1-2205-000CN	Tray 1 Pickup Roller
	RB1-7911-000CN	Tray 2 Pickup Roller
	RB1-7983-000CN	Tray 3 Pickup Roller
	RB1-2133-000CN RF5-0343-000CN RF5-0349-000CN	Paper Out Sensor Flag Tray 1 Separation Pad Transfer Roller

*Rebuilt part, requires exchange

LJ 5 Parts, continued

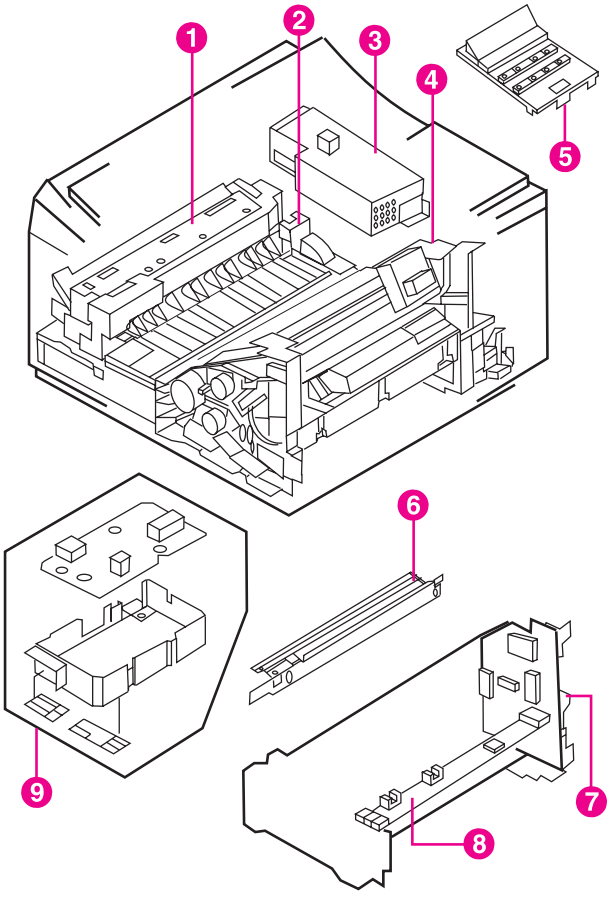


Figure 8-10 **LJ5 Parts**

LJ5 Parts (See figure 8-10)		
1	C2037-69001* C2037-69002*	110V Fusing Assembly 240V Fusing Assembly
2	RH7-1301-000CN	Main Motor
3	C2037-69006* C2037-69007*	110V Power Supply 240V Power Supply
4	C3916-69005*	Paper Feed Assembly
5	RG5-2238-000CN	Display Assembly (without overlay)
6	RG5-0469-020CN	Transfer Guide Assembly
7	RG5-0512-070CN	Paper Control PCA
8	RG5-0514-000CN	Sensor PCA
9	C2037-69009*	High Voltage PCA

*Rebuilt part, requires exchange

LJ 5 Duplexer Parts

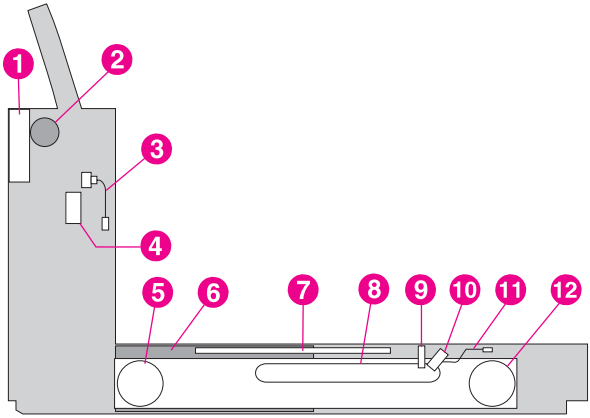


Figure 8-11 **LJ5 Duplexer (cross-section)**

LJ5 Duplexer Parts		
1	RH7-1235-000CN	Switchback Fan
2	RF1-3813-000CN	Switchback Stepper Motor (M2)
3	RG1-3529-000CN	Switchback Sensor Cable
4	RF1-3808-000CN	Switchback Solenoid (SL1)
5	RF1-3814-000CN	Rear Holding Tray Motor (M3)
6	RG1-3503-000CN	Power Supply Assembly
7	RG1-3582-000CN	Duplex Control PCA
8	RA2-2072-000CN	Timing Belt
9	RA2-2076-000CN	Sensor Arm
10	WG8-5210-000CN	Photosensor (PS2)
11	RG1-3530-000CN	Paper Pickup Cable
12	RF1-3815-000CN	Front Holding Tray Motor (M1)

LJ 4V, 4MV Parts

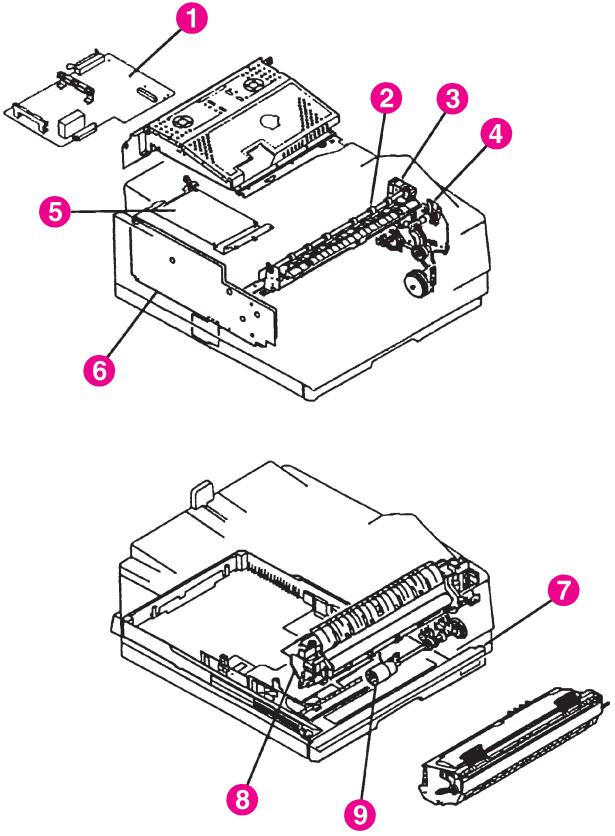


Figure 8-12 **LJ 4V/4MV Major Assemblies**

LJ 4V/4MV Parts		
1	C3143-69001*	Exchange Formatter PCA
2	RG5-0198-000CN	Face Down Delivery Assembly
3	RG5-1545-000CN	Guide, Delivery Unit
4	RG5-1398-000CN	Main Drive Assembly
5	C3141-69003*	DC Controller PCA Assembly
6	RG5-2044-000CN	HV Power Supply Assembly
7	RG5-1552-000CN	Fuser
8	C3141-69002*	Fusing Assembly 100/115V
9	C3141-69001*	Fusing Assembly 220/240V
	RG5-1391-000CN	Pickup Roller Assembly (not shown)
	RF5-0302-000CN	Separation Pad
	RG5-1566-000CN	Drum Drive Assembly
	RS5-2123-000CN	Spring, Compression
	RH7-1126-000CN	Fan (FM1)
	RH7-5094-000CN	Registration Clutch
	RG5-2041-000CN	Laser/Scanner Assembly
	C3141-69005*	Power Supply Assembly 100/115V
	C3141-69006*	Power Supply Assembly 220/240V
	C3141-69007*	Paper Guide Plate Assembly
	RH7-1199-000CN	Motor, dc 17.5W
	WD1-0224-000CN	Fuse,125V, 6.3A
	VD7-0643-151CN	Fuse, 250V, 3.15A
	RH7-1214-000CN	Fan (FM2)
	RH7-1317-000CN	Fan (FM3)
	RG5-1539-000CN	Digital Display Panel 100/115V
	RG5-1540-000CN	Digital Display Panel 220/240V
	RB1-6389-000CN	Static Charge Eliminator
	RG5-1410-000CN	Transfer Roller Assembly
	RG5-1555-060CN	Guide

	RG5-1442-000CN	Cable, Beam Detect
	RG5-1446-000CN	Option Cable Assembly, 500 Sheet LC
	RB5-1447-000CN	Clutch Cable
	RH-6-0098-000CN	Plastic Bezel (does not include digital display)
	RG-5-0239-000CN	DC Cable Assembly
	RG5-1485-000CN	Display Panel Cable Assembly

LJ 4P, 4L Parts

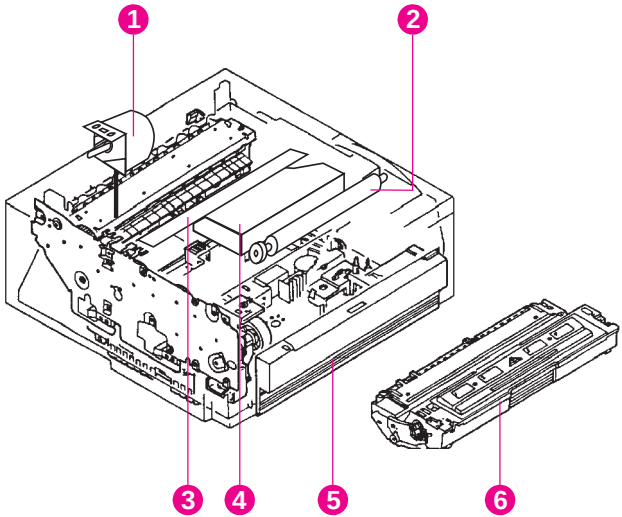


Figure 8-13 LJ 4P, 4L Parts

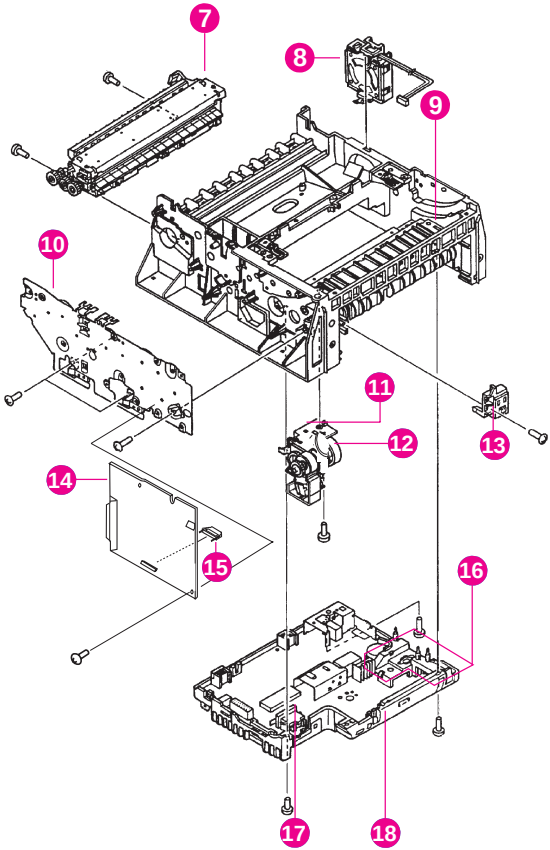


Figure 8-14 **LJ 4P, 4L Parts (continued)**

LJ 4P, 4L Parts (See figures 8-13 and 8-14)		
1	RG5-0765-000CN	Motor Main Assembly
2	RF5-0596-000CN	Transfer Roller Assembly
3	RG5-0667-000CN 4L RG5-0802-000CN 4P	Beam-to-Drum Mirror Beam-to-Drum Mirror
4	C2003-69005* 4L C2005-69005* 4P	Laser/Scanner Assembly Laser/Scanner Assembly
5	R75-0010-000CN 4L R75-2010-000CN 4P	Universal Paper Cassette Universal Paper Cassette
6	92274A	Toner Cartridge
7	C2003-69001* C2003-69002*	Fuser Assembly 100-120V Fuser Assembly 220-240V
8	RG5-0703-000CN 4L RG5-0804-000CN 4P	Fan Assembly Fan Assembly
9	RG5-0711-020CN	Top Oblique Roller Assembly
10	RG5-0684-000CN 4L RG5-0791-000CN 4P	Drive Train Plate Assembly Drive Train Plate Assembly
11	RG5-0668-000CN 4L RG5-0796-000CN 4P	Pickup Assembly Pickup Assembly
12	RB1-3029-000CN 4L RB1-3368-000CN 4P	Pickup Feed D-Roller Pickup Feed D-Roller
13	RG5-0669-000CN	Front Oblique Roller Assembly
14	C2004-69001* 4L C2016-69001* 4ML C2006-69001* 4P C2041-69001* 4MP	Formatter C2003A Formatter C2015 Formatter C2005A Formatter C2040A
15	1252-5278 4L 1252-5460 4P	DC Controller Connector DC Controller Connector
16	RG5-0701-000CN	High Voltage Connector Assembly
17	RH7-5092-000CN	Paper Feed Solenoid
18	C2003-69003* 4L C2003-69004* 4L C2005-69003* 4P C2005-69004* 4P	100-120V DC Controller PCA 220-240V DC Controller PCA 120V DC Controller PCA 220V DC Controller PCA
	RG5-0678-000CN RG5-0679-000CN RY5-0011-000CN RF5-0690-000CN RF5-0601-000CN RB1-3389-000CN RS5-8209-000CN RF5-0601-000CN	Hot Roller 120V Hot Roller 220V Filter Brush Input Paper Sensor Arm Velcro Strip EP Label Input Sensor Arm

*Rebuilt part, requires exchange
**Cover assembly does not include items C, E, and F

LJ 4 Plus, 4 Parts

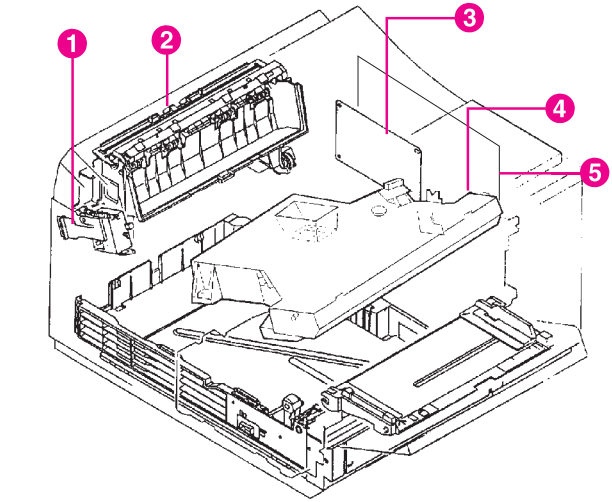


Figure 8-15 **LJ4+, 4 Parts**

LJ 4+, 4 Parts		
1	RG5-0475-060CN	Paper Output Sensor Assembly
2	RG5-0456-000CN 4	Paper Output Assembly
2	RG5-0886-070CN 4+	Paper Output Assembly
3	C2001-69002* 4	DC Controller PCA
3	C2037-69004* 4+	DC Controller PCA
4	C2001-69006* 4	Laser/Scanner Assembly
4	C2037-69008* 4+	Laser/Scanner Assembly
5	C2002-69001* 4	Formatter PCA
5	C2038-69004* 4+	Formatter PCA
	RBI-2127-000CN 4, 4+	MC Pickup Roller

	RBI-2126-000CN 4	**PC Pickup Roller**
	RBI-3477-000CN 4+	**PC Pickup Roller**
	RBI-2632-000CN 4 **RBI-2650-000CN 4+**	**LC Pickup Roller** **LC Pickup Roller**
	RB1-2133-000CN **RF5-0343-000CN** **RF5-0349-000CN**	**Paper Out Sensor Flag** **MP Tray Separation Pad** **Transfer Roller**

*Rebuilt part, requires exchange

LJ 4 Plus, 4 Parts

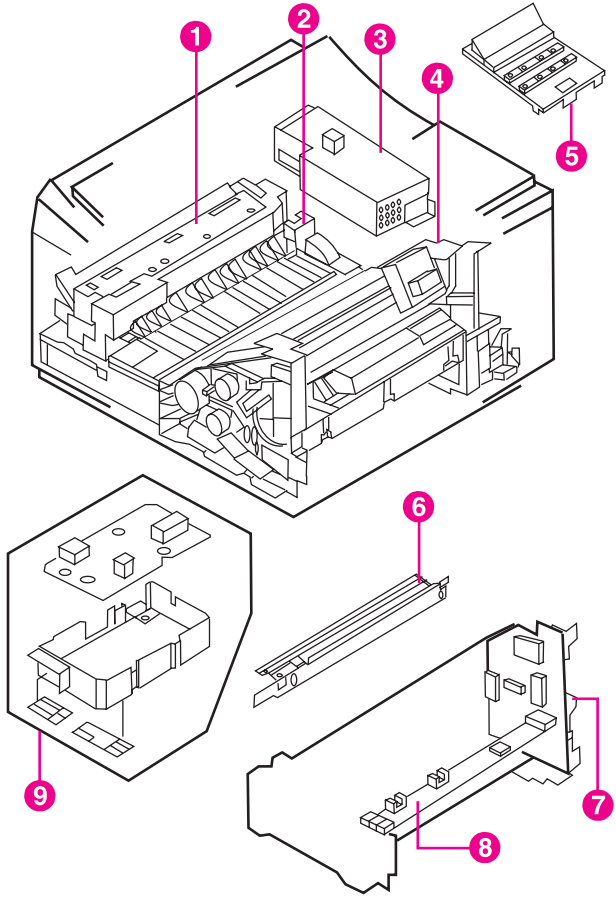


Figure 8-16 **LJ 4+, 4 Parts**

LJ 4+, 4 Parts (see Figure 8-16)		
1 **1**	C2001-69003* 4 C2001-69004* 4 C2037-69001* 4+ C2037-69002* 4+	110V Fusing Assembly 240V Fusing Assembly 110V Fusing Assembly 240V Fusing Assembly
2 **2**	RH7-1151-000CN 4 RH7-1301-000CN 4+	Main Motor Main Motor
3 **3**	C2001-69007* 4 C2001-69008* 4 C2037-69006* 4+ C2037-69007* 4+	110V Power Supply 240V Power Supply 110V Power Supply 240V Power Supply
4 **4**	C2001-69005* C2037-69003* 4+	Paper Feed Assembly Paper Feed Assembly
5 **5**	RG5-0478-000CN 4 C2001-69010* 4 C2037-69005* 4+ RG5-1077-000CN* 4+	Display Assembly (without overlay) Display Assembly (English) Display Assembly (without overlay) Display Assembly (English)
6	RG5-0469-020CN	Transfer Guide Assembly
7	RG5-0512-070CN	Paper Control PCA
8	RG5-0514-000CN	Sensor PCA
9 **9**	C2001-69009* 4 C2037-69009* 4+	High Voltage PCA High Voltage PCA

*Rebuilt part, requires exchange

LJ 4Plus Duplexer Parts

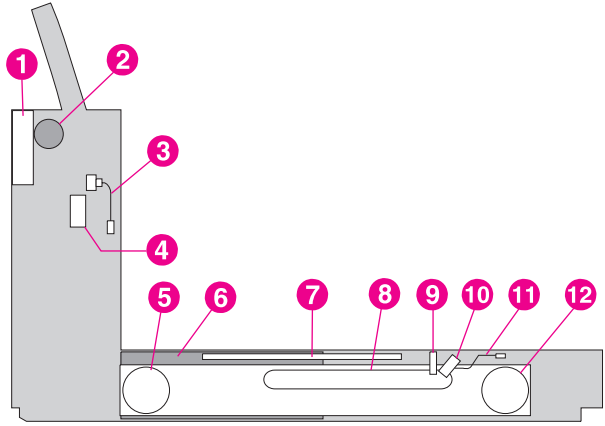


Figure 8-17 LJ 4Plus Duplexer (cross-section)

1	RH7-1235-000CN	Switchback Fan
2	RF1-3801-000CN	Switchback Stepper Motor (M2)
3	RG1-3529-000CN	Switchback Sensor Cable
4	RF1-3808-000CN	Switchback Solenoid (SL1)
5	RF1-3804-000CN	Rear Holding Tray Motor (M3)
6	RG1-3503-000CN	Power Supply Assembly
7	RG1-3501-000CN	Duplex Control PCA
8	RA2-2072-000CN	Timing Belt
9	RA2-2076-000CN	Sensor Arm
10	WG8-5210-000CN	Photosensor (PS2)
11	RG1-3530-000CN	Paper Pickup Cable
12	RF1-3807-000CN	Front Holding Tray Motor (M1)

LJ 4Si, IIISi Parts

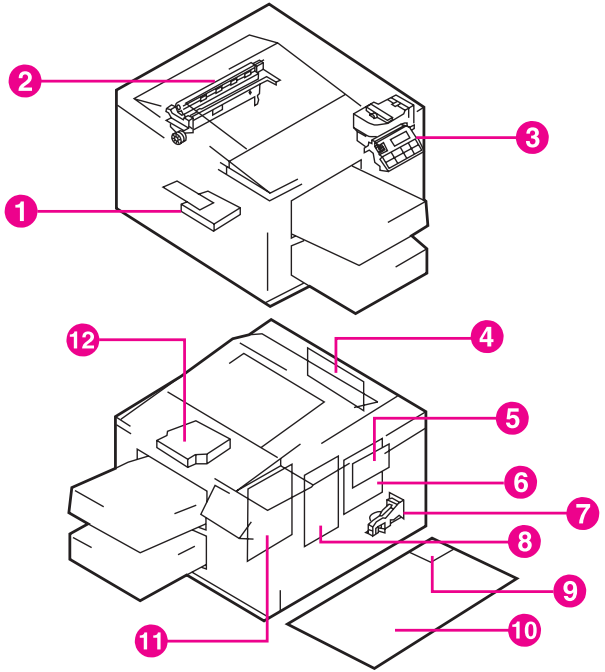


Figure 8-18 **LJ 4Si, IIISi Parts**

LJ 4Si, IIISi Parts		
1 1	RG5-0076-200CN IIISi C2009-69004* 4Si	HV Power Supply HV Power Supply
2	C2009-69008*	Job Offset Assembly
3 3	RG5-0088-000CN IIISi RG5-0162-000CN 4Si	Control Panel Assembly Control Panel Assembly
4	RG5-0067-180CN	Delivery Cover Assembly
5	RG5-0094-000CN	Sensor PCA
6 6	RG5-0095-120CN IIISi RG5-0096-000CN IIISi RG5-0166-060CN 4Si RG5-0167-060CN 4Si	115V AC Power Supply 240V AC Power Supply 115V AC Power Supply 240V AC Power Supply
7	RG5-0102-000CN	Main Switch Assembly
8 8	RG5-0085-060CN IIISi RG5-0086-060CN IIISi C2009-69005** 4Si C2009-69006** 4Si	115V DC Power Supply 240V DC Power Supply 115V DC Power Supply 240V DC Power Supply
9	28644-69002*	MIO Interface Card
10 10 10	33491-69143* IIISi 33491-69160* IIISi C2009-69001* 4Si	Formatter PCA S/N $\leq$ 3199 Formatter PCA S/N $\geq$ 3200 Formatter PCA
11	33491-69011* IIISi C2009-69002* 4Si	DC Controller PCA DC Controller PCA
12 12	RG5-0021-000CN IIISi C2009-69003*	Laser Scanner Assembly Laser Scanner Assembly

*Rebuilt part, requires exchange

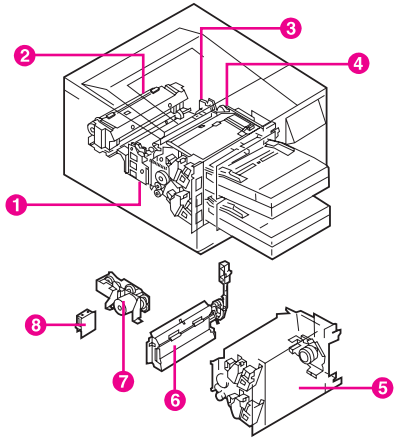


Figure 8-19 LJ 4Si, IIISi Parts

LJ 4Si, IIISi Parts		
1	RG5-0038-000CN	Left Main Block Assembly
2 2	33491-69012* 33491-69013*	115V Fusing Assembly 240V Fusing Assembly
3	RG5-0039-070CN	Right Main Block Assembly
4	RG5-0161-090CN	Registration Assembly
5	C2009-69007*	Paper Input Assembly
6	RG5-0056-000CN	Paper Refeed Assembly
7	RG5-0040-060CN	Main Motor Drive Assembly
8	RG5-0042-000CN	Main Motor PCA
	RF5-0041-000CN	Pickup/Separation Roller
	RG5-0034-100CN	Paper Input PCA
	RH7-1104-000CN	Fan Motor 1 (*Back*)
	RH7-1105-000CN	Fan Motor 2 (*Right Front*), 3Si
	RH7-1106-000CN	Fan Motor 3 (*Right Center*), 3Si
	RH7-1162-000CN	Fan Motor 2 (*Right Front*), 4Si
	RH7-1163-000CN	Fan Motor 3 (*Right Center*), 4Si
	RG5-0141-000CN	Transfer Roller Assembly

*Rebuilt part, requires exchange

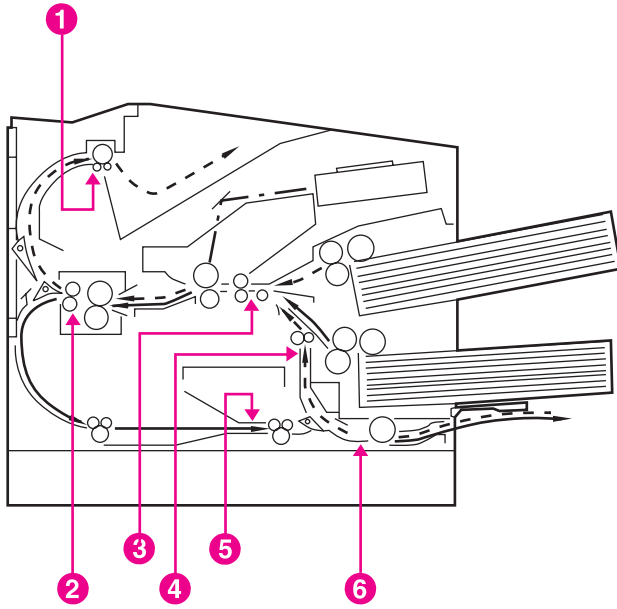


Figure 8-20 LJ 4Si, IIISi Sensor Locations

LJ 4Si, IIISi Sensor Locations		
1	PS7	Face-Down Output Sensor
2	PS151	Fusing Assembly Exit Sensor
3	PS3	Registration Assembly Sensor
4	PS2	Paper Refeed Sensor
5	PS5	Duplex Assembly Sensor
6	PS4	Switchback Assembly Sensor

LJ IIIP, IIP+, IIP Parts

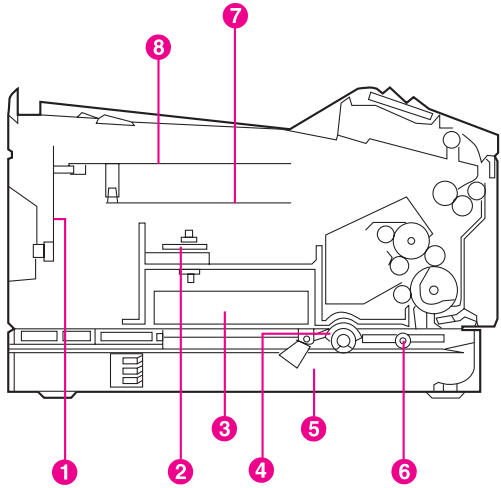
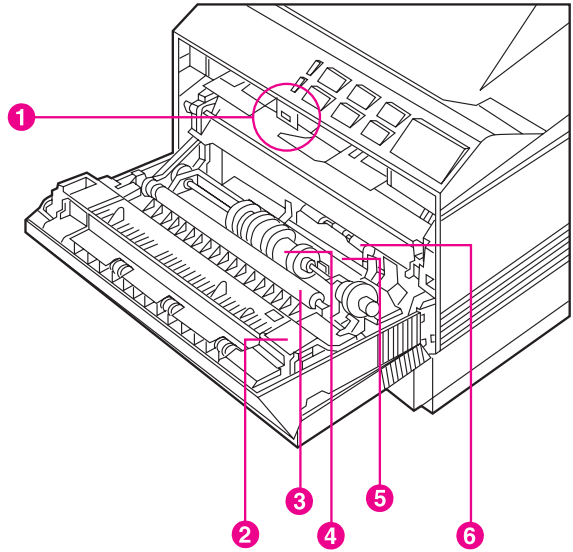


Figure 8-21 LJ IIIP, IIP+, IIP Parts

LJ IIIP, IIP+, IIP Parts		
1 1 1	33471-67905 IIP 33486-67901 IIIP C2092-67901 IIP+	Interface Assembly Dual I/O Interface Assembly Dual I/O Interface Assembly Single I/O (Parallel only)
2 2	RG1-1771-000CN RG1-1769-020CN	Scanner Motor Assembly Laser PCA
3	RG9-0696-000CN	High Voltage Power Supply
4	RA1-7674-000CN	Lower Cassette Pickup Roller (3 required)
5	33472-69001*	Lower Cassette Assembly
6	RA1-7654-000CN	Lower Cassette Feed Roller
7	33471-69002*	DC Controller PCA
8 8 8	33471-69001* IIP 33481-69001* IIIP C2008-69001* IIP+	Formatter PCA Formatter PCA Formatter PCA
	33471-69017 RG1-1910-020CN	120V DC Power Supply 240V DC Power Supply

*Rebuilt part, requires exchange

Figure 8-22 LJ IIIP, IIP+, IIP Parts



LJ IIIP, IIP+, IIP Parts		
1	RG1-1604-000CN	Density PCA
2 2	33471-69018* 33471-69019*	115V Fuser Assembly 240V Fuser Assembly
3	RA1-7627-000CN	Transfer Roller
4	RG1-1792-000CN	MP Pickup Roller Assembly
5	RG1-1912-080CN	Separation Pad
6	RF1-2394-000CN	Input Feed Roller
	RH7-1121-000CN RH6-0010-000CN RG1-1777-000CN RG1-1806-070CN	Fan Cooling Control Panel Assembly EP Drum Drive Gear Assembly MP Tray Assembly

*Rebuilt part, requires exchange

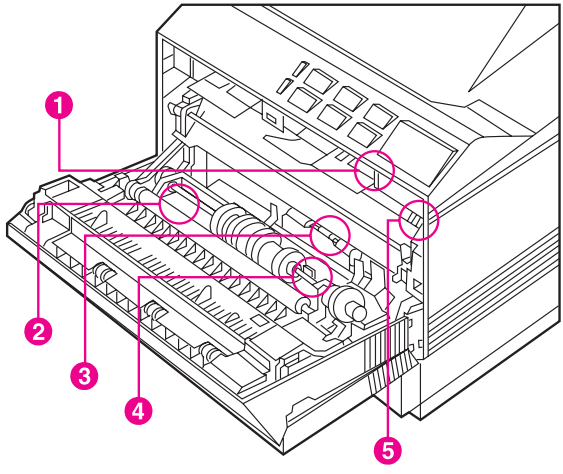


Figure 8-23 **LJIIP, IIP+, IIP Sensor Locations**

LJIIP, IIP+, IIIP Sensor Locations			
1	WG8-0291-000CN	PS3 Photosensor	(Senses paper in fuser)
2	WG8-0323-000CN	PS4 Photosensor	(Senses door open)
3	WG8-0291-000CN	PS1 Photosensor	(Senses paper at input feed rollers)
4	WG8-0323-000CN	PS2 Photosensor	(Senses paper in MP tray)
5	WG8-0291-000CN	PS5 Photosensor	(Senses door open and toner cartridge installed)
	WG8-0291-000CN	PS6 Photosensor	(Senses paper in optional lower cassette)

LJ IIID, III, IID, II Parts

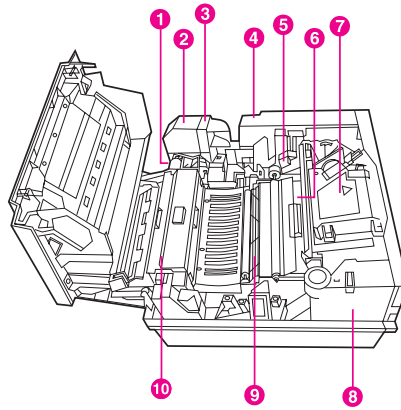


Figure 8-24 LJ IIID, III, IID, II Parts

LJ IIID, III, II Parts		
1	RG9-0205-000CN II	115V AC Power Module
1	RG9-0206-000CN II	240V AC Power Module
1	33459-69001* IID, III, IIID	115V AC Power Module
1	RG9-0750-000CN IID, III, IIID	240V AC Power Module
2	RH7-1122-000CN	Fan Upper Cooling
3	RF1-2130-000CN**	Ozone Filter (User replaceable)
3	RG1-1753-000CN II	Ozone Filter (Upgrades to user replaceable)
4	33449-69005* II III	115V DC Power Supply
4	33440-69010* II III	240V DC Power Supply
4	RG1-1310-000CN IID	115V DC Power Supply
4	RG1-1312-000CN IID	240V DC Power Supply
4	RG1-2007-000CN IIID	115V DC Power Supply
4	RG1-2009-000CN IIID	240V DC Power Supply
5	RG1-0718-000CN II, III, IID	Paper Control PCA
5	RG1-2549-000CN IIID	Paper Control PCA
6	RG1-0932-120CN II, III	Registration Assembly (with separation pad)
	RG1-1326-000CN IID, IIID	Registration Assembly (with separation pad)
7	33449-69006*	Laser Scanner Assembly
8	RG1-0936-110CN	High-Voltage Power Supply Assembly
9	RG1-0933-060CN	Transfer Corona Assembly
10	33440-69003*	115V Fuser Assembly
10	33440-69009*	240V Fuser Assembly

*Rebuilt part, requires exchange **Order 92295Q for package of 2 each.

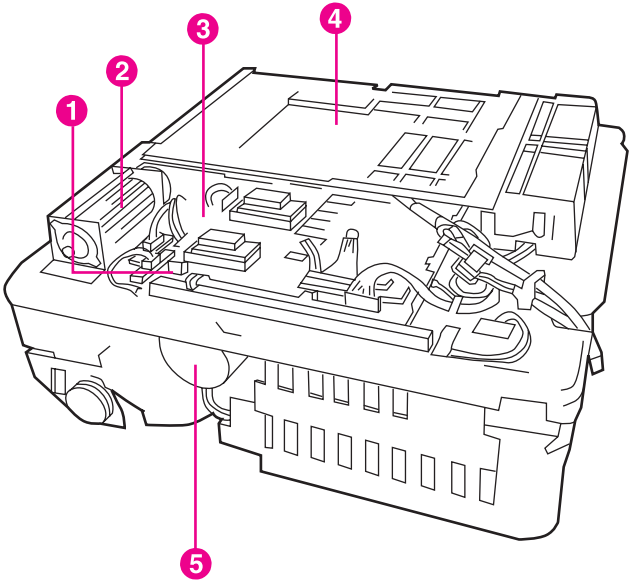


Figure 8-25 **LJ IIID, III, II Parts**

LJ IIID, III, II Parts		
1	SW205 Switch Activation Lever	This switch lever may need to be removed when the DC Controller PCA is replaced.
2	RH7-1056-000CN	Fan, Lower Cooling
3	Information Only	Many failures attributed to DC Controller PCAs are actually cable/connector problems. Always reseat cables before replacing PCA. Replace cable(s) to solve intermittent problems.
3	33440-69002* II	DC Controller PCA
3	33449-69004* III	DC Controller PCA (*see "1" above*)
3	RG1-1278-000CN IID	DC Controller PCA
3	RG1-1970-070CN IIID	DC Controller PCA (*see "1" above*)
4	33440-69001* II	Formatter PCA
4	33497-69001* III, IIID	Formatter PCA
4	33446-69001* IID	Formatter PCA
5	RH7-1048-000CN	Motor, Main Drive
	RG1-0931-060CN II, III	Feed Roller Assembly (Paper pickup)
	RG1-0945-000CN	Delivery Assembly (with Output rollers)
	RG1-0959-000CN II	Control Panel
	RG1-1974-000CN III	Control Panel
	RF1-1145-020CN II, III	Separation Pad
	RA1-8278-030CN III	Top Cover Release Button
	RG1-0966-030CN	Fuser Cleaning Pad
	RG1-0967-000CN	Delivery Coupler Assembly
	33449-69007*	Engine Rebuild Kit (115V)
	33449-69008*	Engine Rebuild Kit (240V)
	33440-67905 II, III	Test Tool (*see chapter 4*)
	33447-67906 IID, IIID	Test Tool (*see chapter 4*)
	RG1-0905-000CN	AC Power Module/DC Power Supply Cable
	RG1-0906-000CN	High-Voltage Supply/DC Control Cable
	RG1-0907-000CN	Fusing/DC Control Cable
	RG1-0908-000CN	Laser Scanning/DC Control Cable
	RG1-0912-000CN	AC Power Module/DC Control Cable
	RH2-5108-000CN	Fiber Optic Cable
	RG1-2307-000CN III	Control Panel Cable Assembly
	SG4-6271-000CN II	Control Panel Cable Assembly

*Rebuilt part, requires exchange

LJ IIID, IID Parts

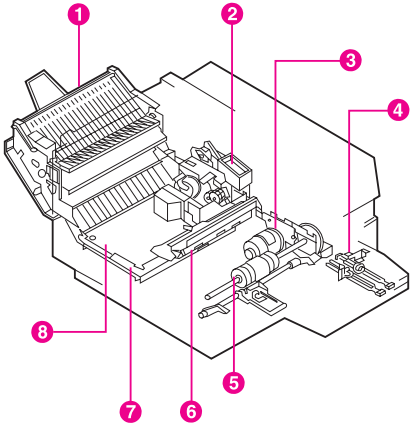


Figure 8-26 **LJ IIID, IID Parts**

LJ IIID, IID Parts		
1 1	RG1-1350-000CN IID RG1-1992-000CN IIID	Switchback Assembly Switchback Assembly
2	RG1-1349-000CN	Switchback Drive Control Assembly
3	RG1-1347-000CN	Lower Feed Drive Motor Assembly
4 4	RG1-1370-000CN IID RG1-2067-000CN IIID	Laser Scanner Cable Laser Scanner Cable
5	RG1-2500-000CN	Lower Pickup Roller Assembly
6	RG1-1345-060CN	Duplex Drive Roller Assembly
7	RG1-2498-000CN	Lower Duplex Guide Assembly
8	RG1-1344-000CN	Upper Duplex Guide Assembly
	RG1-0931-060CN IID RG1-2499-000CN IIID RH6-0009-000CN IID RG1-1989-000CN IIID SG5-4022-000CN RF1-2548-000CN RF1-1145-020CN RG1-2498-000CN RG1-1344-000CN RG1-1356-000CN	Upper Pickup Roller Upper Pickup Roller Control Panel Control Panel Control Panel Cable Assembly Lower Separation Pad Upper Separation Pad Lower Duplex Guide Assembly Upper Duplex Guide Assembly Duplex Align/Drive Roller

LJ 2686D, 2686A Parts

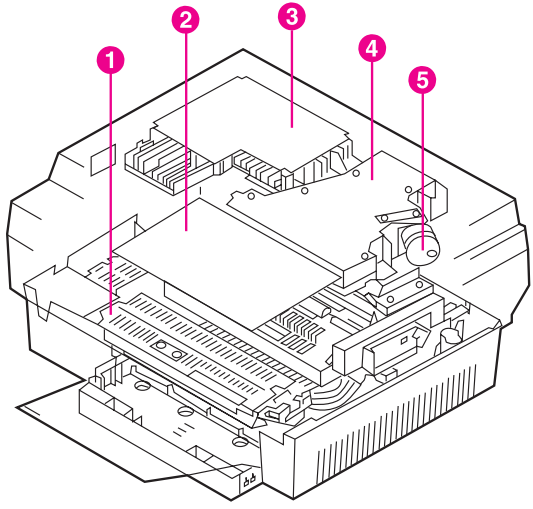


Figure 8-27 **LJ 2686D, 2868A Parts**

LJ 2686D, 2868A Parts		
1 1	02686-69011* 02686-69111*	115V Fusing Assembly 220V Fusing Assembly
2 2	02686-69008* 2686A RG1-0560-000CN 2686D	DC Controller PCA DC Controller PCA
3 3	RG1-0468-060CN RG1-0624-000CN	115V DC Power Supply 240V DC Power Supply
4	02686-69010*	Scanning Unit
5	RG0-0009-000CN	Laser Unit
	02686-69001* 2686A 115V 02686-69004* 2686A 240V 02686-69005* 2686D 02686-69006 2686D	Formatter PCA (Replaces SG4-6014-000CN) Formatter PCA (Replaces SG4-6019-000CN) Formatter PCA (Replaces SG4-6022-000CN in 2686A, Opt. 200, 210, 300, and 2686D) Formatter PCA (Replaces SG4-6025-000CN in 2686A and D with 2 MB option)

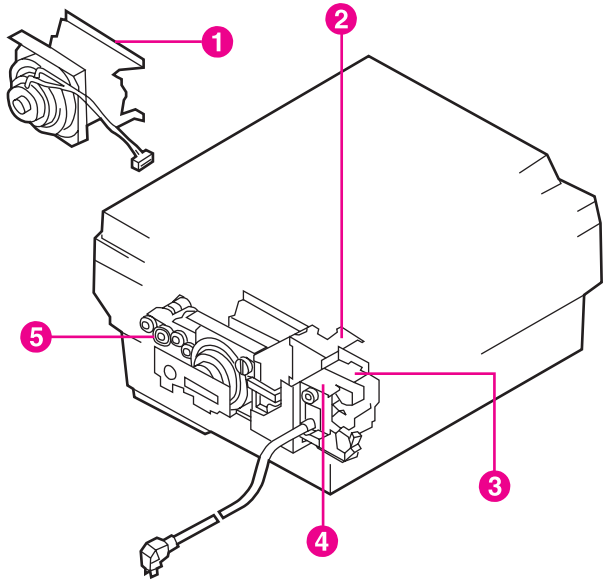


Figure 8-28 LJ 2686D, 2686A Parts

LJ 2686D, 2686A Parts		
1	RG9-0102-000CN	Main Motor Assembly
2	RG1-0649-000CN	High Voltage Power Supply
3 3 3	RG1-0209-030CN RG1-0210-040CN RG1-0204-080CN	AC Controller PCA (115V) AC Controller PCA (240V) AC Driver Assembly (115V)
4	RG1-0208-030CN	Fuser Safety PCA
5	FG1-2354-000CN	Manual Feed Assembly

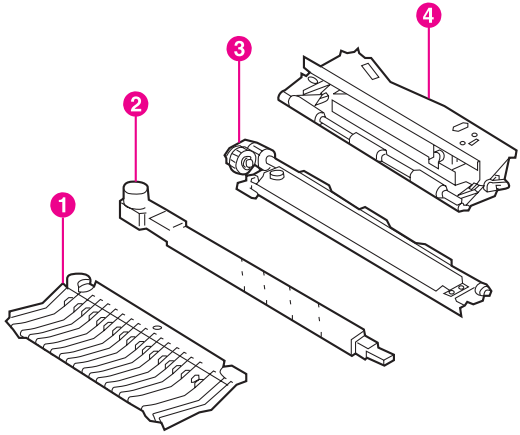


Figure 8-29 LJ 2686D, 2686A Parts

LJ2686D, 2686A Parts		
1	RG1-1039-000CN	Feed Guide Assembly
2	RG1-0191-020CN	Transfer Corona Assembly
3	RG1-0195-000CN	Transfer Guide Assembly
4	RG1-0215-000CN	Registration Shutter Assembly
	RG1-0328-020CN	Separation Belt
	FF1-3872-000CN	Fuse, Resistor 47Ω 1/4 Watt
	RA1-0666-000CN 2686A	Pick-Up Roller (3 required)
	RA1-2621-000CN 2686D	Pick-Up Roller (6 required)
	RA1-2622-000CN 2686D	Pick-Up Roller *small* (2 required)
	FS1-2651-000CN	Pick-Up Clutch Spring
	6040-0018	Clutch Grease (3/8-oz Tube)
	FA2-5664-020CN	Ozone Filter
	RH7-1006-000CN	Fan (115V)
	RH7-1007-000CN	Fan (240V)
	RH7-4007-000CN	Fuser Bulb (110V)
	RH7-4009-000CN	Fuser Bulb (220V)
	FG1-2377-020CN	Fuser Cleaning Pad

9 Summary of service notes and technical tips

Overview

This chapter addresses some of the more common service issues.

The Troubleshooting Process

The troubleshooting process, illustrated in figures 9-1 and 9-2, is a systematic approach to resolving printer problems. In searching for the causes for printer malfunctions and errors, the troubleshooting process addresses major problems first and then identifies secondary problems.

In figures 9-1 and 9-2, each heading depicts a major troubleshooting step. A **YES** answer to the questions allows you to proceed to the next major step. A **NO** answer indicates that additional testing is needed. Proceed to the referenced location and follow the instructions for that area. After completing the additional testing, proceed to the next major step.

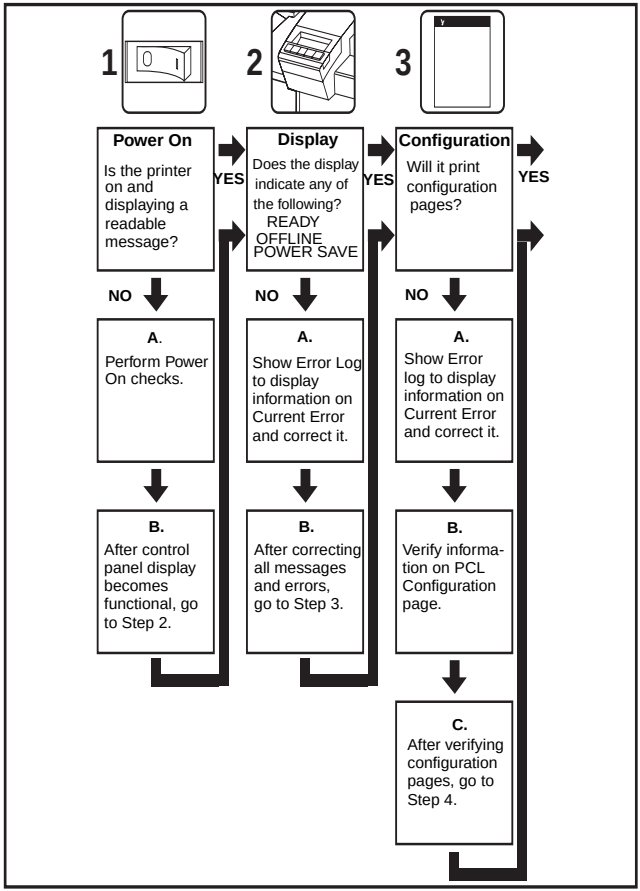


Figure 9-1 **Troubleshooting process for HP LaserJet printers**

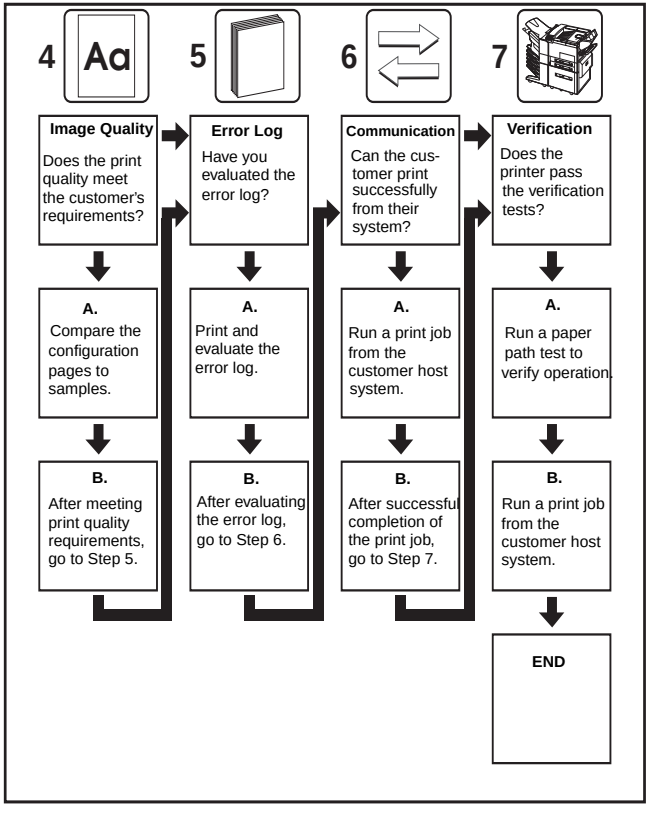
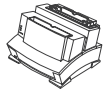
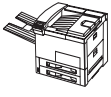


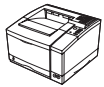
Figure 9-2 **Troubleshooting process for HP LaserJet printers**

Service Topic Index

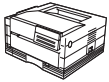
Obtain service notes from HPNN or HP FIRST. See the chapter on services and support for additional information.

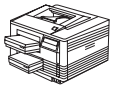
The tables that follow provide illustrations of printer models, a description of common problems, and pertinent reference information.

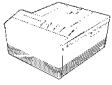
Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet 6L/5L 	Replacement formatter and date code	N/A	206
	Accordion jams in fuser	C3941A-01	207
	Countermeasure for clearing fuser jams	C3941A-02A	208
LaserJet 5Si and 5Si MX 	Print quality defect: smeared print	C3166A-01 C3167A-01	213
	Noisy fan	C3166A-02 C3167A-02	214
	2000-sheet input unit jams	C3166A-03 C3167A-03	215
	13.x paper jams are due to bad clutch connector	C3166A-04 C3167A-04	216
	Firmware revision corrects 79 Errors	C3166A-05 C3167A-05	217
	Revised DC controller improves fusing	C3166A-06A C3167A-06A	220
	MIO and NVRAM reset problems	C3166A-07 C3167A-07	221

Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet 5Si and 5Si MX (continued)	Toner dumping and/or 79 service (04CC)	C3166A-08A	223
	Improved MP tray	C3166A-09 C3167A-09	224
	Printer firmware rolls to version 9.1	C3166A-10 C3167A-10	226
	Set default printer font from front panel	C3166A-11 C3167A-11	228
	High-capacity input (2,000-sheet input tray)	C3166A-12 C3167A-12	229
	Microswitch assembly in the 2,000-sheet input tray	C3166A-13 C3167A-13	231
	Executive-size paper tray	C3166A-14 C3167A-14	232
	Improved 220V fuser reduces toner contamination	C3166A-15 C3167A-15	234
	Improved MP tray	C3166A-16 C3167A-16	235
	Vendor revision “B” causes 79 service errors	C3166A-17 C3167A-17	237
	Entire Image Manager software	C3166A-18 C3167A-18	238
LaserJet 5 	LJ 5 Introduction: service note is available through HP FIRST and other sources	C3916A-01	N/A

Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet 4V, 4MV 	Paper jams with three-hole punched paper	C3141A-01	241
	Printer hangs and displays “79 (0523) Service Error”	C3141A-02	242
	Printer will not access service model	C3141A-03	243
	PostScript SIMM replacement part	C3141A-04	N/A
	Repeating 94MM print defect	C3141A-05	243
	57 Service Error (not caused by main motor)	C3141A-06	244
	Thumb screw and back plate (part numbers)	C3141A-07	244
	55 Service Error troubleshooting hints	C3141A-08	245
	MP tray jams	C3141A-10	245
	Preventing damage to toner cartridge shutter arm	N/A	246
	Multipurpose tray pickup roller does not stop	C3141A-12 & C3142A-12	246
	Leading edge smudge	C3142A-13	247
	Formatter fan noise	C3141-14	248
	Paper jams occur in output area when large media is used	C3142A-15	250
	Input jamming when feeding from the 500-sheet feeder	C3760A-02C	250

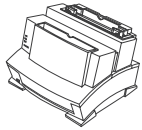
Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet 4P/ 4MP and 4L/4ML 	Clearing paper jams in LJ 4L and 4P	C2003A-01	252
	Fusing assembly gear lubricant	C2003A-02	N/A
	LaserJet 4P product introduction	C2005A-01	N/A
	LaserJet 4P “50 Service Error” (220 volt units only)	C2005A-02	N/A
	LaserJet 4P Service Manual part corrections	C2005A-03	N/A
	LaserJet 4L, 4P part number and diagram corrections	C2005A-04	N/A
	Media jams caused by input paper sensor arm that is broken or binding	C2003A-03 C2015A-03 C2005A-07 C2040A-07 C3134A-01	253
	Broken printer frame - paper cassette support guides	C2003A-04 C2015A-04 C2005A-08 C2040A-08 C3150A-02 C3155A-02 C3134A-02 C3932A-02 C3935A-02	254

Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet 4 Plus/4M Plus and 4/4M 	Paper jams in optional 500 lower cassette	C2001A-01	255
	Paper jam errors 13 and 41.3 (multi-feed jams)	C2001A-02	256
	Accordion jams in output assembly	C2001A-03	257
	500-sheet lower cassette (Tray 3) shim improves paper handling	C2001A-04 C2021A-04 C2037A-02 C2039A-02 C3916A-03 C3171A-03 C395AA-03	258
	LJ 4 Plus ONLY: product introduction	C2037A-01	N/A
	LJ 4 Plus ONLY: duplex product introduction	C3157A-01	N/A
	False paper jams (last page only)	N/A	259
	Image skew (missing paper weight)	N/A	260
LaserJet 4Si 	Error 52 laser scanner failures	C2010A-01	N/A
	Missing scan lines 70-110mm from top of page	C2010A-02	261
	Preventing jams: face up or output stacker	C2010A-03	262
	Paper jamming and feed problems	N/A	263

Printer Model	Problem Description	Service Note (number)	Technical Tip (page number)
LaserJet IIIP, IIP Plus, IIP 	Moaning sound in separation pad	N/A	264
	Compressed print	N/A	265
	Continuous “PS Busy”	N/A	267
	Incompatibility: new fusing assembly component	33471A/AB-04 33481A/AB-04 C2007A-02	268
LaserJet Series III, II 	Potential safety issue following fuser repair	33440A/AB/AU12 33447A/AB/AU09 33449A/AB-05 33459A/AB-03	269
	Internal cabling problems	N/A	270
LaserJet IIID, IIID 	Light-brown stain on front side of duplexed page	33447A/AB/AU10 33459A/AB-04	271
	Misaligned duplexed image	N/A	272
	Duplex jamming: duplex drive roller assembly	N/A	273
	Duplex jamming: misaligned switchback assembly	N/A	274
	Duplex jamming: worn lower duplex guide assembly	N/A	274
	Power envelope feeder jams	N/A	275

Technical Tips

LaserJet 6L, 5L



Replacement Formatter and Date Code

Service Note Number: N/A

Situation: The HP LaserJet 5L printer contains three formatter PCAs and three firmware versions.

Solution: The replacement formatter for all versions of the formatter and firmware is the C3942-69002 formatter with a firmware date code 19950623.

Formatter	FW Date Code	Replacement Formatter (all)	Replacement Date Code (all)
C3942-60001	19950227	C3942-69002	19950623
C3942-60001	19950522		
C3942-60001	19950623		
C3942-60002	19950623		
C3942-60003	19950522		
C3942-60003	19950623		

Accordion Jams in the Printer Fuser

Service Note Number: C3941A-01

Serial Numbers Affected: <JPBB022333, <JPTB000101, <JPBJ051310, <JPBK006151, <JPBL033831, <JPTJ000101, <JPTK000101, <JPTL000101, <USBB158323, <JPTM080500, <JPBM007279, <JPBM007279, <JPBT000101, <JPBV000101, <JPTT090666, <JPTV122612, <JPTX029034

Description: Under some conditions, paper can be pushed back down into the fuser. This results in a jam in the fuser area. The jam can be so severe that customers cannot remove the paper and the printer requires servicing.

To remove the jam, the fuser area of the printer must be disassembled. Check the fusers and pressure rollers for damage from the jam or from the attempts to remove the paper.

Install the output bin in any LaserJet 5L printer that has the affected serial number and that is returned for any service, paper jam, or other problem.

Solution: Place the output bin (RB1-7332-000CN) in the output tray of the printer. Doing so decreases the number of paper jams in the fuser area. The bin should be installed in all printers that do not already have it.

Countermeasure for Clearing Jams in the Printer Fuser

Service Note Number: C3941A-02

Serial Numbers Affected: JPBK000000 - JPBK016388 JPBL000000 - JPBL055374, JPCW000000 - JPCW043448 JPVW000000 - JPVW081157, USCB000000 - USCB302011 JPBV000000 - JPBV010501, JPVV000000 - JPVV216255 CNVM000000 - CNVM175233, CNVN000000 - CNVN0189964

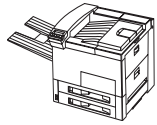
Description: When a paper jam occurs in the LaserJet 5L, it commonly occurs in the fuser area, with the paper folding accordion-style between the fuser and delivery assembly. When paper jams occur in the fuser, customers often cannot remove the paper, and their attempts to do so damage the printer. As a result, the printer requires servicing. This countermeasure will not prevent paper jams, but will allow users to clear the paper jams without damaging the printer.

To remove this type of paper jam, the fuser area of the printer must be disassembled. Check the fuser and pressure roller for damage from the paper jam or from the attempts to remove the paper jam. See chapter 6 in the service manual for disassembly instructions.

This JP protector and the output bin (from service note C3941A-01) should be installed in all LaserJet 5L printers that are within the affected serial number range that are being serviced.

Solution: Add the JP Protector (RB1-7334-000CN) to the delivery assembly (RG5-2012-000CN) of every printer in the affected serial number range that is being serviced. To install this part, remove the delivery assembly according to the instructions provided in the service manual. The delivery assembly is shown in figure 8-10 of the service manual. Install the JP protector into the delivery assembly. Order the Service Note if graphics are needed.

LJ5Si



Print Quality Defect: Smeared Print

Service Note Number: C3166A-01 & C3167A-01

Associated Part Numbers: RG5-1887-000CN, C3166-69003

Serial Number Range:

- **115V**
  USCB000703-USCB001710, NLCB000703-NLCB001710, SGCB000703-SGCB001710, USCC000703-USCC001710, NLCC000703-NLCC001710, SGCC000703-SGCC001710.
- **220V**
  USRB000045-USRB00083, NLRB000045-NLRB000883, SGRB000045-SGRB000883, USRC000045-USRC000883, NLRC000045-NLRC000883, SGRC000045-SGRC000883.

Description: Printers in the serial number range given above have a potential for smeared print. Smeared print is typically noticed first in heavy black or graphic areas, usually at the right-hand side of the media. More specifically, without magnification, blotchy areas of toner or fuzziness are visible around characters. A coating on the transfer roller and a specific current value applied to the roller induce this print anomaly.

Solution: HP has implemented an uncoated transfer roller and increased the current to the transfer roller via the DC controller printed circuit board (PCB). These solutions appear to have resolved this print-smear defect. After verifying the serial number range and the print defect, replace the transfer roller and the DC controller PCB.

Noisy Fan 3 (FM3)

Service Note Number: C3166A-02 & C3167A-02

Associated Part Numbers: 5182-5899/Noise Kit

Serial Number Range:

- **115v**
  USCB000001-USCB099999, USCC000001-USCC011766, SGCB000001-SGCB099999, USBC000001-USBC015282, USBC000001-USBC015282, SGBB000001-SGBB099999, SGBC000001-SGBC015282, NLBB000001-NLBB099999, NLBC000001-NLBC015282
- **220v**
  USRB000001-USRB0999999, USRC000001-USRC006687, SGRB000001-SGRB099999, SGRC000001-SGRC006687, NLRB000001-NLRB099999, NLRC000001-NLRC006687, USQB000001-USQB099999, USQC000001-USQC011106, USQC000001-USQC011106, SGQB000001-SGQB-099999, SGQC000001-SGQC011106, NLQB000001-NLQB099999-, NLQC000001-NLQC011106

Description: Printers with the serial numbers in the range listed above have a potential for excessive fan noise.

The noise is a result of fan vibration. More specifically, this vibration causes an increase of resonance between the fan duct and the formatter shield cover. This intensification of sound may be annoying.

Solution: HP has set up a noise kit (5182-5899). It includes a piece of foam tape and detailed instructions with drawings for correct placement of the foam tape to eliminate noise between the fan and the formatter shield.

Verify that the printer is in the serial number range listed. Attach the foam tape between the fan duct and the formatter shield cover according to the instructions included with the noise kit.

Paper Jams When Feeding from the 2,000-Sheet Input Unit

Service Note Number: C3166A-03 & C3167A-03

Associated Part Numbers: RG5-1915-040CN

Serial Number Range:

- **115V**
  USBC000941-USBC002659, USCC000047-USCC000482
  USCC001711-USCC002017
- **220v**
  USQC001445-USQC001748, USRC001226-USRC003279
  NLQC001445-NLQC001748, NLRC001226-NLRC003279
  SGQC001445-SGQC001748, SGRC001226-SGRC003279
- **110V**
  SGBC000941-SGBC002659, SGCC000047-SGCC000482
  SGCC001711-SGCC002017

Description: After approximately 50,000 sheets have been printed from the 2,000-sheet input unit, there is a possibility of increased paper jams in the area of the right cover assembly. This increased potential for jams is caused by the texture of the cover guide being abraded, thus causing paper to stick to the paper guide.

Solution: To prevent this problem,16 ribs were added to the textured face of the cover guide. These ribs provide a better path for the paper because they will not prematurely wear out, as the textured surface does. The solution was implemented at the factory on printers that are not included in range given above.

First, confirm that the printer is within the range above. If not, this service note does not apply and other troubleshooting needs to conducted. Confirm that the jam condition occurs only when feeding from the 2,000-sheet input accessory. Keep in mind that the page count is approximate and could vary slightly for rougher media. Replace the right cover assembly (RG5-1519-040CN).

13.X Paper Jam Errors May Be Caused by Bad Clutch Connector

Service Note Number: C3166A-04 & C3167A-04

Associated Part Numbers: RH7-5120-000CN; PIU Clutch, RH7-5119-000CN; Registration Clutch, Tray 1 Pickup Assembly; RG5-1880-090CN

Serial Number Range:

- **115V**
  USBC000000-USBC008623,USCC000000-USCC007432
  SGBC000000-SGBC008623,SGCC000000-SGCC007432
- **220V**
  USQC000000-USQC008887,USRC000000-USRC003729
  NLQC000000-NLQC008887,NLRC000000-NLRC003729
  SGQC000000-SGQC008887,SGRC000000-SGRC003729

Description: We have found reliability problems with feed clutches in the paper-feed assemblies used in LaserJet 5Si and 5Si Mx printers. The same clutch is used in the paper input unit, registration assembly, and Tray 1 pickup assembly. What makes each clutch unique is the gear attached for each particular assembly and the position of the connector relative to the stop. The analysis of the clutches shows that the contact pin cracks as it is pressed into the connector housing. We believe this is caused by metal fatigue, which may cause reliability problems with the clutch. These problems result in open circuit clutches. If the clutch problem is the Tray 1 pickup assembly, the pickup roller will not turn, resulting in 13.2 paper jams or 41.3 wrong-size paper errors. If it is the registration clutch, the registration assembly will not turn, resulting in 13.3 paper jams and paper jammed under the registration assembly. If it is the PIU clutch, the printer will feed the paper to PS #1 and then stop, resulting in a 13.2 paper jam.

Solution: HP has worked with the engine vendor to quickly sort out suspect clutches and ensure that only good parts are available as replacements. However, some printers in the serial number ranges listed earlier may have clutches that fail. Identify the jam condition as it relates to one of the assemblies above, and then replace the appropriate clutch or assembly.

New Firmware Revision Corrects 79 Error

Service Note Number: C3166A-05 & C3167A-05

Serial Number Range:

- **110V**
  XXYC0000 - XXYC9999
  XXYD0000 - XXYD9999
- **220V**
  XXYC00000 - XXYC99999
  XXYD00000 - XXYD99999

  Where XX = US, NL, or SG
  Y=B,C,D for 110V, or Q,R, or S for 220V

Affected Part Numbers: C3168-69001

Part Required: Formatter PCB

Situation: The LaserJet 5Si/5Si MX was introduced with firmware revision 7.9. To verify a firmware revision, review the configuration page in the TEST MENU. The most common error seen with this version firmware is a 79 Service Error with an associated sub-code. The sub-codes for which this service note is associated are 81ee, 8101, 0101, 0142, and 8108.

Solution: HP has completed testing and recently made available a revised formatter assembly. This new 8.5 version firmware will restore the above 79 Service Error and the sub-codes listed. This new firmware will **not** correct any MIO resets or NVRAM resets that cause the page count, serial number, firmware number, or default paper size to reset.

We are aware of this issue and expect to have a solution in the very near future. In addition to the 79 Service Error, the following issues have been corrected:

1 The printer hangs if printing while the printer is in PowerSave mode after a power cycle reset.

2 The printer hangs in “Processing Job” when printing a PostScript duplex job and the source paper tray runs out of paper before the job is finished.

3 The PostScript configuration page hangs the printer if an error `TRAY 2 EMPTY` is displayed on the front panel.

4 79 Service (81ee) when printing a Harvard graphics file.

5 79 Service (8101). Send down a PCL macro and print any other page.

6 Internal test hangs when turning printer on.

7 Bug would not allow selection of the pitch size for a permanent soft font.

8 79 Service (8108) when de-allocating a Hewlett-Packard graphics language (HPGL) global symbol set.

9 20 Memory Overflow problem.

10 Crash with Cyrillic font SIMM.

11 Bug where PJL default job identification (JOBID) only works if diagnostics is on.

12 OS/2 Job-Cancel bug.

13 Bug that hangs the printer when the menu item MIO CFG is set to YES (Configure) and then a PCL configuration page is selected to print.

14 The string ISO A3 paper size was changed to A3.

15 A floating point problem where HP was not properly initializing the floating point registers.

16 79 SERVICE (40e0) that occurred after a 20 MEMORY OVERFLOW.

17 Hang while canceling a PostScript job. (This was a problem when keying <ctrl>C in the middle of sending a PostScript job in a UNIX environment and then selecting Cancel Job from the front panel.)

Action: Verify the error, sub-code, and serial number range. If the serial number has a “C” or “D” in the fourth character location, the printer was built with the 7_9 version firmware, which may experience the 79 errors. The new version firmware is an 8_5. Always confirm the firmware revision by reviewing the configuration page. All printers in which the fourth character is an “F” are of the new revision. Use the configuration page to get the serial number, page count, default paper size, and maintenance count information needed for the new formatter PCB. See pages 3-18 in the service manual for accessing service mode. Replace the formatter if a 79 error and one of the above sub-codes are associated.

Revised DC Controller Improves Fusing from Trays 2 and 3

Service Note Number: C3166A-06A & C3167A-06A

Serial Number Range:

- **110V**
  XXCB00000 - XXCB019885 XXCB019886 - XXCG999999
  XXCC00000 - XXCC019885 XXCC019886 - XXCG999999
  XXCD00000 - XXCD019885 XXCD019886 - XXCG999999
  XXBB00000 - XXBB013886 XXBB013887 - XXBG999999
  XXBC00000 - XXBC013886 XXBC013887 - XXBG999999
  XXBD00000 - XXBD013886 XXBD013887 - XXBG999999
- **220V**
  XXQB00000 - XXQB015530
  XXQC00000 - XXQC015530
  XXQD00000 - XXQD015530
  XXRB00000 - XXRB008920
  XXRC00000 - XXRC008920
  XXRD00000 - XXRD008920
  Where XX = US, NL, or SG

Part Required: Revised DC Controller

Situation: This service note is to communicate the availability of a new DC controller which has an increased temperature for all supported paper sizes. The service note it supersedes affected only letter-sized and ledger-sized media. Printers in the serial number range listed above have an older version firmware which can be updated if fusing is found to be a problem with any of the supported paper sizes. If a printer was updated by the first revision (C3166-06 or C3167-06) of this service note, there is no need to update to the 2.60—unless a paper size other than letter or ledger is experiencing a problem with toner adhesion. Printers manufactured with an “H” in the fourth character position of the serial number have this new 2.60 version DC controller firmware.

Solution: To improve fusing ability on all supported paper sizes, the fusing temperature has been increased from 180 degrees Celsius to 190 degrees Celsius for trays 2 and 3. The solution is provided through updated firmware on the DC Controller PCB.

Action: Confirm the printer is within the serial number range listed, and then replace the DC controller PCB. It is also important to be cautious of the media being used. If you need to verify the firmware revision, refer to IC201 on the DC controller board. The first revision 1.11 is identified by a “02.” The current 2.22 revision is identified by a “05” on IC201. The 2.6 revision is identified with a “060"on IC201.

New Firmware Revision Fixes MIO and NVRAM Reset Problems

Service Note Number: C3166A-07 & C3167A-07

Serial Number Range:

- **110V**
  XXYC00000 - XXYC99999
  XXYF00000 - XXYF99999
- **220V**
  XXYC00000 - XXYC99999
  XXYF00000 - XXYF99999

  Where XX = US, NL, or SG
  Y=B,C,D for 110V, or Q,R, or S for 220V

Affected Part Numbers: C3168-69002

Part Required: Formatter PCB

Situation: When the printer is turned off and then back on again, there is a potential that the MIO or NVRAM configuration will be lost. As a result, the user could no longer successfully print a job, and they must reconfigure the Network card before successful printing is resumed. If the NVRAM is reset, the printer has no serial number, accurate page count, or default paper size. When the formatter has been reset, it forces the MIO card to reset itself. (This function is part of the MIO card specification.) The reset of the MIO card will occur even if the MIO card was not installed at the time the formatter reset itself. If plugged in later, the MIO card will detect the bits in NVRAM, which will tell it to perform a RESET of the MIO Card. This condition may have been misdiagnosed in the past as a defective MIO card. It is easy to assume the MIO card is the problem when in fact it is not.

Solution: HP has completed testing and (as of July 1, 1996) made available a revised formatter assembly to the service channel. This new 8.6 version firmware resolves the problem of MIO and NVRAM resets.

Action: Replace the formatter if MIO and NVRAM resets are experienced. All printers in which the fourth character of the printer serial number is a “G” are of the new revision. Any serial number lower than “G” in the fourth character position has a potential to fail. Use the configuration page to get the serial number, page count, default paper size, and maintenance count information needed for the new formatter PCB. If the NVRAM has reset the serial number, locate it on the back panel of the printer. See page 3-18 in the service manual for information on accessing service mode to re-enter this information for the new formatter.

Note

At installation, the formatter will force a reset of itself and the MIO card; therefore, an MIO configuration will be required at the time of installation.

Toner Dumping and/or 79 Service with (04CC) Subcode

Service Note Number: C3166A-08A

Serial Number Range:

- **110V**: XXXH00000 - XXXX99999
- **220V**: XXXH00000 - XXXX99999

Parts Required: C3166-69010 (Exchange), RG5-1844-050CN (New)

Situation: HP has been investigating an increase in calls regarding toner dumping inside of the printer. The investigation revealed three potential scenarios in which toner dumps. It is imperative that the support partners thoroughly troubleshoot this condition in order to successfully complete the repair.

Scenario Number 1: (Most likely scenario)
Toner cartridge usage may have exceeded the life of the cartridge. A toner cartridge for the 5Si family of printers has a life expectancy of 15,000 images. A toner cartridge that is used longer than 15,000 images can experience a failure due to wear on the photoconductive drum and on some mechanical components such as gears and seals. This failure can cause some toner to leak into the printer. In this scenario, no printer parts are needed. Refer the customer to proper usage.

Scenario Number 2: If the printer has a formatter revision that is earlier than 9.1, the engine may continue to run, which causes dumping of the toner cartridge. Verify that the version of the DC controller is a 1.11 version. To do so, refer to IC 201 on the DC controller; the identifier is “02.” Replace the DC controller if it is a 1.11 version. Do not replace the formatter for this condition.

Scenario Number 3: (Least likely scenario) The printer may be exhibiting a 79 Service (04CC) error. The 79 Service (04CC) was added to the firmware code of formatters (9.1 version or greater) to capture the signal combination that resulted in toner dumping. Verify that the DC controller is not a 1.11 version, as in scenario number 2. If the error condition continues, power cycle the printer; do not replace the formatter. Escalate through the normal escalation channel if the error persists.

Action: Replace the DC controller only if it is a 1.11 version.

Improved MP Tray

Service Note Number: C3166A-09 & C3167A-09

Serial Number Range:

- **110V**: XXYC00000 - XXYC99999
  XXYD00000 - XXYD99999
- **220V**: XXYC00000 - XXYC99999
  XXYD00000 - XXYD99999

  Where XX = US, NL, or SG
  Y=B,C,D for 110V, or Q,R, or S for 220V

Affected Part Number: RG5-1880-090

Part Required: MP tray

Situation: The current MP tray experienced a higher than acceptable level of failures from the tray failing to lift. This can be an intermittent failure. The failure occurs when the actuating solenoid fails to engage the tray-lifting mechanism. The feed roller engages to drive the paper, but the paper tray is never lifted. The printer will attempt to raise the tray twice before posting an error. The majority of the time the printer will post a 13.2 paper jam error, which can be cleared by opening and closing the printer door. Sometimes the printer will report a 58.3 error, which requires that the printer be power-cycled. However, if the printer has a formatter with version 8.6 or older firmware, the 58.3 error message will disappear within 5 seconds, leaving the previous message that occurred in the display. The printer is now in a state requiring that it be power cycled, but nothing is indicated on the control panel. With version 9.1 firmware, the 58.3 error message will remain on the display, stating that the printer be power cycled. In all cases, the error will be logged and can be viewed by printing the error logs. Although there may be many causes for a 13.2 paper jam error, only an MP tray failure will cause a 58.3 error.

Solution: The MP tray has been modified with a more powerful solenoid and a metal sleeve designed to reduce friction.

Action: Replace a failing MP tray with a new one. The failure can be confirmed by observing the tray not lifting when the feed roller is in operation or by 58.3 Errors in the error logs.

LaserJet 5Si Printer Firmware Rolls to Version 9.1

Service Note Number: C3166A-10 & C3167A-10

Serial Number Range:

- **110V**: XXYC00000 - XXYG99999
- **220V**: XXYC00000 - XXYG99999

  Where XX = US, NL, or SG
  Y = B, C, D for 110V, or Q, R, or S for 220V

Affected Part Number: C3168-69003

Part Required: Formatter PCB

Situation: The firmware for the LaserJet 5Si has rolled to a new revision that includes corrections to some specific error conditions that were found after the product's introduction. HP recommends upgrading to the new version if any of the problems listed below occur.

Solution: HP has completed testing and, as of November 1, 1996, has made available a 9.1 version of the formatter assembly. The following fixes are included in the new version of the firmware:

- HUNG IN `PROCESSING JOB`. The printer has the potential to hang up and not respond to any key presses to the front panel. The front panel will display `PROCESSING JOBS`. Getting out of this locked-up mode requires power-cycling the printer. This is corrected in the 9.1 firmware.
- 20 MEMORY OVERFLOW PROBLEM. A problem with memory allocation existed in the 73 firmware, which allocated the maximum amount available. This resulted in numerous memory overflow problems. The problem was fixed to allocate just the required amount of memory.

- FORM LENGTH SELECTION FROM THE FRONT PANEL. This function can be found in the PCL MENU structure of the control panel.
- SLOW PRINTING OF FORMS. Versions 7.9, 8.5, and 8.6 firmware had a problem handling raster graphics in 300 dot-per-inch (dpi) mode. Often, the size of the raster strip used was too small and inefficient. The implemented fix allows the formatter to run close to engine speed.
- INTERNAL TRAYS NOT LIFTING WHILE IN POWERSAVE MODE. If the user opened one of the internal trays while the printer was in PowerSave mode, the tray would not lift it after it was closed. This would result in an “Out of Paper” message for that tray.
- IMPROPER SELECTION OF TRANSPARENCIES AND CARDSTOCK ALLOWED FROM INTERNAL TRAYS. Customers were able to select transparencies and card stock as a paper type from the front panel even though these paper types were not supported from internal trays 2 and 3. These selections no longer appear on the front panel.

Action: Replace the formatter assembly if the problem is listed in this service note or depicted in the troubleshooting section of the *LaserJet 5Si Service Manual*.

Note

For information on a complete Hewlett-Packard LaserJet 5Si Printer Mopy Upgrade, call (800) 563-2983.

Default Printer Font Can Now Be Set from the Front Panel

Service Note Number: C3166A-11 & C3167A-11

Serial Number Range:

- **110V:** XXY C00000 - XXY G99999
- **220V:** XXY C00000 - XXY G99999

  Where XX = US, NL, or SG
  Y = B, C, D for 110V, or Q, R, S for 220V

Part Required: Formatter PCB

Situation: The LaserJet 5Si printer was introduced without the capacity of being able to set a default front panel font. HP soon realized the importance of this capability to many customers, particularly those in a UNIX environment who rely on setting a default font at the front panel of the printer.

Solution: HP has added this functionality back into the current 9.1 version of firmware. Any customer needing the front panel font capability can get it by contacting the Customer Support Center (U.S.) at (208) 323-2551 or by contacting the nearest HP Authorized Dealer Service Center.

Outside of the U.S., customers should contact the European Customer Support Center or the nearest HP Authorized Service Center.

There are also PJL commands that allow for permanent changing of the default printer font. For example: For font number 2, Ec%-12345X@PJL DEFAULT LPARM :PCL FONTNUMBER = 2<CR> <LF> Ec%-12345X

Action: Replace the formatter assembly according the instructions provided in the removal and replacement section of the service manual, part number C4077-99014. BE SURE TO RE-ENTER THE SERIAL NUMBER, PAGE COUNT, AND MAINTENANCE COUNT VIA THE SERVICE MODE. This information is required so the printer will report the “PERFORM USER MAINTENANCE” message at the 350,000 page interval.

High-Capacity Input (2,000-Sheet Input Tray)

Service Note Number: C3166A-12 & C3167A-12

Serial Number Range: LCF00000 to LCF99999

Part Required: None

Situation: In some cases, the registration from Tray 4/HCI causes print to start too close to the edge of the paper. Although this may or may not be within specifications, some users do not want printing to be so close to the edge. To them, the situation is unacceptable.

Solution: This issue is **not** affecting all of the installed base, since in many cases the Tray 4 alignment is fine. In other cases, customers do **not** care about the Tray 4 offset. However, for those customers experiencing the problem, perform the adjustment procedure given below.

Action: Adjustment procedure from the Tray 4/HCI left margin:

1. With the HCI stand-alone, remove the left, right, and rear covers from the HCI.
2. Remove the vertical transfer unit.

3 Open the HCI paper tray.

4 Loosen both screws that support the paper tray locking bracket on the right side of the HCI.

5 Locate the bracket hole and pin at the middle (right side).

6 Slide the bracket so the locating pin is positioned at the middle of the bracket hole.

7 Tighten both screws.

8 Loosen both screws that support the paper tray locking bracket on the left side of the HCI.

9 Locate the bracket hole and pin at the middle (left side).

10 Slide the bracket so the locating pin is positioned at the middle of the bracket hole.

11 Tighten both screws.

12 Reassemble the vertical transfer unit.

13 Make sure that all cables (vertical transfer unit and paper deck drive assembly) are re-connected.

14 Reinstall the left, right, and rear covers to the HCI.

Note

Positioning the locating pin at the middle could still be unacceptable for some customer's applications. If so, repeat the procedure by moving the locating pin further back and testing the margin.

Microswitch Assembly in the 2,000-Sheet Input Tray

Service Note Number: C3166A-13, C3167A-13

Serial Number Range: LCF00000 to LCF99999

Affected Part Number: C3168-69003

Part Required: RG5-2546-000CN

Situation: A microswitch, located at the center top of the HCI tray, has been implemented to protect the tray's functionality. When depressed, this microswitch displays "TRAY 4 EMPTY", causing the tray to **not** lift at all. For unknown reasons, this microswitch has been failing or breaking. When this happens, replacement of the whole unit is required because the microswitch was **not** set up as a spare part and is not documented in either the service or operator manuals.

The purpose of this switch is to avoid serious damage to Tray 4 if a customer loads Letter or A4 paper sizes (portrait orientation) in the right side of Tray 4, and stocks paper or any other media in the empty left side at the same time. If this happens, the tray will be unable to lift all the way up because the microswitch is depressed. The depressed microswitch disables the current of the lifting motor, thus avoiding serious damage to Tray 4.

Solution: Work is currently underway to obtain samples from the field in order to perform a failure analysis and to design a countermeasure.

It is strongly recommended that customers do **not** stock paper in the empty space of the HCI. Results of usability tests indicate that users do **not** pay attention to the warning label attached on the bottom-left side of Tray 4.

Action: If the microswitch is damaged, regardless of the cause, replace it by ordering part number RG5-2546-000CN. This number is already set up at SMO/SME.

The microswitch assembly includes the microswitch itself, the mounting metallic bar, and the necessary cables.

Removal and Replacement: Lift the printer clear of the HCI and place it on a smooth, sturdy surface. WIth the HCI standalone:

1. Remove the top cover.
2. Remove the back cover.
3. Disconnect the outside cables (connector with two cables) to release the microswitch assembly from the back top of the frame.
4. Release the screw that holds the microswitch mounting metallic bar.
5. Take out the microswitch assembly (switch and metallic bar) by pushing forward the back edge of the mounting metallic bar.
6. Install the replacement microswitch assembly.

LaserJet 5Si Now Available with an Executive-Size Paper Tray

Service Note Number: C3166A-14 & C3167A-14

Situation: HP recently made available the LaserJet 5Si with an executive-size paper tray. The 5Si Executive printer is product number C3166A, option #ABAUEA. The product option is specifically for the Marriott Corporation.

This tray provides users with the capability to print from a 500-sheet tray, which is exclusive to executive-size media (10.5 x 7.3 in).

Prior to the new executive tray, Tray 1 was the only source for printing this size of media. The executive tray replaces the standard Tray 2. All other sizes must feed from either Tray 1 or Tray 3.

Support Information: The Executive printer is identified with an "X" in the fourth position of the serial number. Response Center systems have been updated to recognize the Executive printer for repair purposes because the Executive printer has three unique parts:

- DC controller, part number C3166-60153
- Executive-size tray, part number R77-0008-000CN
- Printer label, C3166-00032

Become familiar with these two specific conditions:

1. If you receive the message "MANUALLY FEED TRAY 1 PLAIN EXECUTIVE", when Tray 2 is empty, load executive-size paper into Tray 2 and press **Select** on the printer control panel.
2. If Tray 1 and Tray 2 are loaded with different types of executive-size paper, such as plain executive paper in Tray 1 and yellow executive paper in Tray 2, you must select your input tray by media type, rather than by the input tray. See the user guide for information on configuring the media types at the control panel for each tray. Make the type selection in the printer driver on the PAPER tab, which is under the OPTIONS button for the printer, or from the Page Setup dialog of the word processing application.

Improved 220V Fuser Reduces Toner Contamination

Service Note Number: C3166A-15 & C3167A-15

Serial Number Range:

- **220V**: NLYC000000 - SGYK999999

  Where XX = NL or SG

Affected Part Number: C3166A

Part Required:

New: RG5-1871-190
Exchange: C3166-69013

Situation: This service note is to communicate the availability of a new revision of the C3166A fuser unit in Europe. This new fuser reduces the likelihood of build-up from calcium carbonate on fuser rollers, which can degrade print quality. Calcium carbonate is used as a filler and brightener by European paper manufacturers. This build-up has only been seen on papers using calcium carbonate. The problem is often described as “blobs on the output” or “printouts getting dirty after a few days.”

Solution: Replace the failing user assembly with this new version to reduce problems of print quality caused by European paper containing calcium carbonate.

Action: Confirm that the print quality problems are caused by the fusing unit and are not attributable to other components such as the toner cartridge or the use of media that does not meet HP specifications. The build-up on the fuser can be visually inspected by examining the surface of the rollers. If the rollers are contaminated, replace the fuser unit and record the page count in the CSO (in the “Usg Qty” field on the U2 screen).

Improved Multipurpose Tray

Service Note Number: C3166A-16A & C3167A-15A

Serial Number Range:

- **110V**
  XXBY000000 - XXBY142588
  XXJY000000 - XXJY 142588
  XXDY000000 - XXDY097990
  XXLY000000 - XXLY097990
  XXCY000000 - XXCY099999
- **220V**
  XXZY000000 - XXQY028190
  XXSY000000 - XXSY070281
  XXRY000000 - XXRY099999

  Where XX = US, NL, or SG
  Y = B, C, D, F, G, H, J, K, X

Affected Part Numbers: RG5-1880-100CN, MP serial numbers JAA0326819 to JAA0420130; RG5-1880-110CN, MP serial numbers JAA0420131 and higher

Part Required: MP Tray

Situation: The current MP tray has been experiencing a higher than acceptable level of failures in which the tray fails to lift. This can be an intermittent failure. The failure occurs when the actuating solenoid fails to engage the tray-lifting mechanism. The feed roller engages to drive the paper, but the paper tray is never lifted. The printer attempts to raise the tray twice before posting an error.

The majority of the time, the printer posts a 13.2 paper jam error, which can be cleared by opening and closing the printer door. Sometimes the printer reports a 58.3 error message, which requires the printer to be power-cycled. However, if the printer has a formatter with version 8.6 or older firmware, the 58.3 error message disappears within 5 seconds. In this case, the message for the previous error remains on the display. The printer is now in a state requiring that it be power- cycled, with no indication on the control panel.

With version 9.1 firmware, the 58.3 error message remains on the display, stating that the printer needs to be power-cycled. In all cases, the error is logged and can be viewed by printing the error logs. Although there may be many causes for a 13.2 paper jam error, only an MP tray failure will cause a 58.3 error.

Solution: The MP tray has been modified with a more powerful solenoid and a metal tab designed to reduce friction.

Action: Replace a failing MP tray with a new one: RG5-1880-100CN, MP serial numbers JAA0326819 to JAA0420130 or RG5-1880-110CN, MP serial numbers JAA0420131 and higher. The failure can be confirmed by observing the tray not lifting when the feed roller is in operation or by 58.3 errors in the error logs.

16-Megabyte SIMM Manufactured by HP: Vendor Revision “B” Causes 79 Service Errors

Service Note Number: C3166A-17 & C3167A-17

Serial Number Range:

- **110V**: XXYC00000 - XXYJ99999
- **220V**: XXYC00000 - XXYJ99999

  Where XX = US, NL, or SG
  Y=B,C,D for 110V, or Q,R, or S for 220V

Affected Part Number: C3146

Part Required: C3146A

Situation: LaserJet 5Si family printers having 16-Megabyte (MB) (revision “B”) SIMMs installed can fail with various 79 service errors. Removing or replacing these SIMMs with non-revision “B” SIMMs or two 8 MB SIMMs resolves this issue. To identify the failing SIMMs, look for the identification number “HM5117400BS6” on the components. Older 16 MB SIMMs (Revision “A”, identification number ends with AS6), as well as SIMMs made with other components (not marked with this specific identification number) do not exhibit this problem.

Solution: Replace the failing SIMM with a non-revision “B” SIMM.

Action:

- Verify that the printer has a 16 MB SIMM marked with HM5117400BS6.
- Do **not** replace the formatter.
- Remove the 16 MB SIMM and verify that the printer no longer fails.
- Replace the failing SIMM with a non-revision “B” SIMM and return the failing SIMM.
- CSO entries: Move the product number and the serial number to the system entry fields. Change the product number field from the printer model number to C3146A (SIMM) and the serial number to 0000A00000.

LaserJet 5Si and Entire Image Manager Software

Service Note Number: C3166A-18

Serial Number Range:

- **110V**: XXYC00000 - XXYJ99999
- **220V**: XXYC00000 - XXYJ99999

  Where XX = US, NL, or SG
  Y=B,C,D for 110V, or Q,R,S for 220V

Part Required: C3168-69005

Situation: HP has entered an agreement with Entire, Incorporated. Entire has developed a software solution called the Entire Image Manager. Essentially, the solution takes up to four LJ 5Si printers and enables them to work as one logical printer. With print speeds up to 96 pages per minute, it is ideal for printing books and manuals as well as other high-volume print jobs.

The software comes with a full standard set of tools to raster image process (RIP), manage, merge, retrieve, impose, queue, and store in an electronic library, and to output files to an LJ 5Si.

Image Manager can accept PostScript Level 2, PCL 5e, TIFF, and CCITT G3/G4 files from modems, floppy disks, tapes, or other media. Customers can connect their printer cluster to almost any Ethernet, Token Ring, LocalTalk, and FDDI networks. It supports TCP/IP, Novell, DECnet, AppleTalk, LAN Manager, LAN server, SNA, and Banyan protocols. Any engine sold after September 1, 1997 that does not have the 9.7 firmware or later will require a formatter replacement.

Solution: Clarity of support and firmware compatibility for this solution is important. If the customer is having problems with the solution, please instruct them to call the HP reseller that sold them their solution. If the reseller is distributing the Image Manager software, they also have the responsibility for first-level support for the software.

Second-level support is provided by the master distributor: Ahearne & Soper support (800) 879-3224 (extension 120).

The master distributor will determine whether the equipment is defective and, if so, direct the customer to the manufacturer.

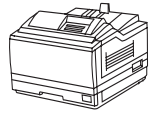
Entire, Inc. is responsible for third-level support on the software bundle: Entire's support group can be reached at (716) 742-2200 (extension 251).

HP's traditional LJ 5Si support infrastructure will be responsible for supporting the LJ 5Si engine. The Image Manager Software only works with firmware version 9.7 or later. This service note covers any 5Si printers sold after September 1, 1997 that do not have the required firmware to be compatible with the Entire Image Manager software.

In Europe, the solution will be rolled out as a co-labeled HP and Entire product. In North America, the solution will be a third-party program. The rest of the world will not be addressed until we have the other two major regions running. Both regions are expected to see installations around September 1, 1997.

Action: Confirm the firmware version by printing a configuration page. Replace the formatter assembly (part number C3168-69005) as noted above.

LJ 4V/4MV



Paper Jams When Using Three-Hole Punched Paper

Service Note Number: C3141A-01 & C3142A-01

Serial Numbers Affected:

- **110V**: JPBF000000-JPBF002856, JPBC000000-JPBC003385, JPBH000000-JPBH001216
- **220-240V**: JPBQ000000-JPBQ014821, JPBR000000-JPBR008695, JPBS000000-JPBS003616

Associated Part Numbers: DC controller PCB (P/N RG5-1932-000CN)

Situation: Printers in the serial number ranges listed above have a DC controller that may not allow enough time for three-hole paper to pass by the first paper sensor (PS501).

Solution: To increase paper feed performance with three-hole punched paper, an end of the front registration sensor lever has been widened. To accommodate the widened lever, the guide assembly was notched as necessary, and the main frame structure was enlarged. Sensor levers for the serial number range above are unique. If they are worn or broken, the only replacement part is RF5-0397-000CN.

Action: If a three-hole jam problem occurs in printers that are within the serial number range, replace the DC controller PCB.

Printer Hangs or Displays 79 (0523) Service Error

Service Note Number: C3141A-02

Situation: When using a PostScript level 1 driver, the printer will either hang or exhibit a 79 SERVICE (0523) error when the following condition is present:

Page size A has been selected, with the printer containing Page size B, according to the following table:

	B (Tray)			
A (Driver)	Legal	A4	JB5	JB4
Legal		X	X	
11 x 17	X	X	X	X
A3	X	X	X	X
JB4		X	X	
Custom	X	X	X	X

The hang occurs if the job consists of only one page. If the job consists of multiple pages, the error 79 occurs.

Solution:

- Ask the customer to use PostScript level 2 drivers exclusively.
- If #1 is not feasible, replace the formatter PCA.

Printer Will Not Access Service Mode

Service Note Number: C3141A-03A

Serial Numbers Affected: JPB0000000 - JPB9999999

Associated Part Numbers: C3141-60003 - patch SIMM

Description: Printers manufactured in the range shown above may have firmware that will not recognize depressed control panel keys upon power-up. Therefore, there is no access to Service Mode, Language Localization, or Cold Reset. This affects 110V and 220V units with the #ABA English option.

Solution: To order a patch SIMM, call HP Distribution at (970) 339-7009 (U.S.) or (+31) 20 682-8291 (Europe).

Repeating 94mm Print Defect

Service Note Number: C3141A-05

Associated Part Numbers: Toner cartridge: C3900A

Situation: Toner cartridges for the LaserJet 4V and 4MV products could have a damaged print drum. Due to the design of the product, this defect can be induced if the cartridge body is squeezed hard in the middle. The defect can also occur if the cartridge is dropped (even if the cartridge is still in the box).

The symptom will be one or two black or white dots that repeat every 94mm in the direction of the paper path. The dots will be located near the center of a letter-sized page when viewed in a landscape orientation.

Solution/Action: Any toner cartridge that exhibits this defect should be returned to HP or an HP Authorized Service Center for replacement. Cartridges beginning with lot code 4I28S* will not have the potential to become damaged.

57 Service Error (not caused by the main motor)

Service Note Number: C3141A-06

Associated Part Numbers: RS5-2125-000CN - Spring

Description: A 57.1 SERVICE error, which normally indicates a main motor failure, may also be caused by a broken spring in the sensor flag associated with the Front Door Open Sensor (PS402). Failure of the Door Sensor prohibits power to the main motor, causing the error.

Solution: Before replacing the main motor assembly, check the spring and sensor flag. Replace the spring, if broken.

Parts for Thumb Screws and Back Plate of Formatter Card Cage Can Be Ordered

Service Note Number: C3141A-07 & C3142A-07

Associated Part Number: Thumb screws (RB1-5788-000CN) and the Cardcage Back Plate (RB1-5556-000CN)

Situation: Some cases have been reported of the formatter thumb screws breaking; in some cases, the threads in the card cage back plate have been stripped. The design and material used for the screw is being addressed. However, in the event that this becomes a problem, it is important that the individual pieces are available through our normal parts-ordering channels.

Therefore, the thumb screws (RB1-5788-000CN) and the card cage backplate (RB1-5556-000CN) are now available.

Replace broken screws or stripped back plate on failure only. Refer to Internal Components in chapter 8 of the LaserJet 4V service manual. The back plate is part of the formatter card cage, as shown in figure 8-10, item 11. Make the appropriate mark-ups in your service manuals.

55 Service Error Troubleshooting Hint

Service Note Number: C3141A-08 & C3142A-08

Situation: A “55 Service Error” is usually caused by a communication error between the DC controller and the formatter PCA. If the formatter PCA is not seated properly to the interface PCA, this error will occur. This is an important troubleshooting tip because the service manual directs you to replace the laser/scanner as the second most-likely solution. Mark your service manuals with the second most-likely fix to be: “2. Reseat the formatter PCA” prior to unnecessarily replacing the laser/scanner assembly. The next revision to the service manual will reflect this change.

MP Tray Paper Jams

Service Note Number: C3141A-10

Associated Part Numbers: RB1-6389-000CN - static charge eliminator, RG5-1555-050CN - guide

Serial Numbers Affected:

- **110V**: JPCF011302, JPCG007020, JPCH005190
- **220V**: JPCQ002711, JPCR000101, JPVQ003523, JPVR008774, JPVS000101

Description: Early units have an increased possibility of paper jams. The parts listed above have been upgraded to fix the problem.

Solution: Refer to chapter 6 in the service manual to remove the registration roller guide plate and anti-static brush. Replace with the redesigned parts.

Preventing Damage to Toner Cartridge Shutter Arm

Service Note Number: NONE

Associated Part Numbers: NONE

Description: If the front door of the printer is not fully opened when a toner cartridge is being removed, it is very likely that the shutter that covers the cartridge drum will be broken, destroying the cartridge and resulting in blank pages being printed.

Solution: Advise the customer to always open the front door completely before removing the toner cartridge.

Pickup Roller on the Multipurpose Tray Does Not Stop

Service Note Number: C3141A-12 & C3142A-12

Serial Numbers Affected:

- 115V: JPBXXXXXXX - ALL, JPCXXXXXXX - ALL, JPDFXXXXXX - ALL, JPDGXXXXXX - ALL, JPDH000000 - JPDH030601
- 220V: JPBXXXXXXX - ALL, JPCXXXXXXX - ALL, JPDXXXXXXX - ALL, JPXS000000 - JPDH007198

Associated Part Number: RG5-1584-000CN (paper guide plate assembly), C3141-69007 (exchange part number)

Situation: Occasionally the pickup clutch on the paper guide plate assembly will not disengage. If this occurs, paper is continually picked from the (MP) multipurpose tray, and as many as three or more sheets jam in the printer.

Solution: A new clutch is now being used on the paper guide plate assembly (RG5-1584-000CN). The old clutch used an oil-impregnated metal bushing as a lubricant. On some clutches, this oil would leak from the bushing, causing the armature to stick. Then, the clutch would not disengage. The new clutch uses a mold bushing that does not require oil, thus solving the problem. The part number for the paper guide plate assembly containing this new clutch is the exchange part number C3141-69007. After confirming the error condition described above, replace the paper guide plate assembly.

Leading Edge Smudge

Service Note Number: C3142A-13

Associated Serial Numbers:

- **115V**: JPFH000000-JPFH001548, JPBXXXXXXX-ALL, JPCXXXXXXX-ALL, JPDXXXXXXX-ALL
- **220V**: JPFQ000000-JPFQ000389, JPXS000000-JPXS022660, JPVXXXXXXX-ALL, JPWXXXXXXX-ALL

Associated Part Number: Old part number: RF5-1380-000CN; New part number: RF5-1380-030CN

Situation: The fuser entrance guide has a ridge of material along its length. Toner can build up along the edge of this ridge. This accumulated toner can cause the page to catch at the inlet to the fuser; when caught, the unfused toner scatters, creating a print defect called “leading edge smudge.” This defect appears as smudged print or a toner halo around the characters. This print defect can occur as early as a 10K page count. The smudges can occur anywhere along the leading edge of the document (landscape paper path).

Solution: Material has been removed along the length of the fuser entrance guide, and the ribs were extended. This change prevents the toner accumulation on the entrance guide from hitting the paper. Refer to the LaserJet 4V and 4MV Service Manual, Second Edition (C3141-90929), section 8, figure 8-4, item 28 for the part. Replace the part with the new part number: RF5-1380-030CN.

Action: For the replacement procedure, see the *LaserJet 4V and 4MV Service Manual*: Second Edition (C3141-90929).

Note

Be sure to observe all warnings, notes, and cautions provided in this procedure.

Formatter Fan Noise

Service Note Number: C3141-14

Serial Numbers Affected:

- **100V/120V**
  JPBF000000 to JPBF999999, JPDF000000 to JPDF999999, JPBG000000 to JPBG999999, JPDG000000 to JPDG999999, JPBH000000 to JPBH999999, JPDH000000 to JPDH999999, JPCF000000 to JPCF999999, JPFF000000 to JPFF018699, JPCG000000 to JPCG999999, JPFH000000 to JPFH005145, JPCH000000 to JPCH999999
- **220V/240V**
  JPBQ000000 to JPBQ999999, JPVQ000000 to JPVQ999999, JPBR000000 to JPBR999999, JPVR000000 to JPVR999999, JPBS000000 to JPBS999999, JPVS000000 to JPVS999999, JPCQ000000 to JPCQ999999, JPWQ000000 to JPWQ999999, JPCR000000 to JPCR999999, JPWR000000 to JPWR999999, JPCS000000 to JPCS999999, JPWS000000 to JPWS999999, JPDQ000000 to JPDQ999999, JPXQ000000 to JPXQ012118, JPDR000000 to JPDR999999, JPXS000000 to JPXS033088, JPDS000000 to JPDS999999, JPFQ000000 to JPFQ006200, JPFS000000 to JPFS010991

Associated Part Number: Fan: RH7-1317-000CN or video controller assembly: RG5-1560-060CN

Situation: The majority of formatter fan replacements have been for noise. These replacements have been categorized into two failure modes:

- The fan/card cage assembly produces a strong pitch or tone due to the fan rotational speed that causes the formatter cage to resonate. Customers may be more sensitive to this noise because this fan is the only fan on at all times.
- Some fans may have a defective bearing which causes noise.

Solution: The operating speed of the fan has been re-engineered. The fan speed has been reduced from 7,000 revolutions per minute (rpm) to 5,000 rpm with no detrimental effect upon the printer operation. Also, an inspection process was created to check for bearing defects. The formatter fan has received a new part number RH7-1317-000CN and is available now through regular parts distribution.

Action: For the replacement procedure, refer to the *LaserJet 4V and 4MV Service Manual*, Second Edition (C3141-90929), section 6, pages 6-16; “Card Cage.” The fan then can be removed from the card cage assembly and the countermeasure fan installed.

Note

Be sure to observe all warnings, notes, and cautions provided in this procedure.

Paper Jams In Output Area When Using Large Media

Service Note Number: C3142A-15

Affected Serial Numbers: All Units

Associated Part Number: RG5-0198-000CN

Situation: After 400k images are printed, toner can build up on the face-down delivery assembly rollers. This can cause paper jams in the fuser or output area and/or leave claw marks on large-sized media (B size or 11X17 media).

Solution: Clean or replace the face-down delivery assembly rollers.

Action: For the replacement procedure, refer to the LaserJet 4V and 4MV Service Manual, Second Edition (C3141-90929).

Note

Be sure to observe all warnings, notes, and cautions provided in this procedure.

Input Jamming When Feeding from the 500-Sheet Feeder

Service Note Number: C3760A-02C

Associated Part Numbers: C3760-67900/Roller and Clip Kit

Situation: The volume of calls has increased for LaserJet 4V/4MV printers with the 500-sheet optional cassette. The jam occurs at the registration area (PS1) and/or there are mis-picks from the optional tray.

After extensive investigation and testing, we determined that installing the Roller and Clip kit should resolve the input jamming condition.

Solution:

1 The tooling mold for the J11 clip was modified to ensure that the manufactured part is free of burrs.

2 The manufacturing process of the rollers has been modified with a new ultrasonic cleaning procedure to eliminate any blooming effects. The new preconditioned rollers have been tested extensively, with good results and performance.

3 A new Roller and Clip kit (C3760-67900) has been set up at SMO/SME. The kit contains a J11 deflector clip, a new preconditioned roller assembly, and installation guidelines.

Action:

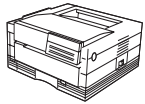
1 If the failure occurs, install the new Roller and Clip kit C3760-67900, using the instructions sheet included in the kit.

2 If you continue to experience a jamming problem from the lower cassette after performing the service note, consider the following recommendations:

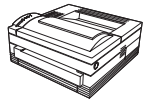
- Be sure **not** to install the roller assembly backwards.
- Be sure that paper-size slider is seated properly into the four black pulleys (bushings). Ensure the pulleys are fully seated in their channels.
- Be sure that the position lock on the paper-size slider is engaged in the correct hole. (The position lock has a green lever.)
- Be sure that the magnetic sensors that detect paper size are properly placed.
- Try different media or have the media evaluated. We have seen numerous issues relating to the customer's media.
- The lower cassette units with serial number DE03695118 and greater are shipped with the new preconditioned roller assembly.

LJ 4P/4MP

and



LJ 4L/4ML



Paper Jams

Service Note Number: C2003A-01 (Information only)

Description: A majority of the problems on the LaserJet 4L and 4P center around paper jams and removal of paper jams. In their haste to remove paper jams, people often damage the paper-input sensor flag (RF5-0601-000CN). The printer is inoperable with a broken sensor flag.

Solution: Replace the broken flag, and INSTRUCT THE CUSTOMER on proper removal of jams.

If a jam occurs at the printer's input:

1. Slide the paper to the right, freeing it from the front and top oblique rollers of the printer.
2. Carefully pull the paper out from the front of the printer.

If a jam occurs at the rear of the printer:

1. Open the fuser door and lift up on the release lever of the printer's rear fusing assembly.
2. Carefully pull the paper out from the rear of the printer.

Media Jams Caused by Broken or Binding Input Paper Sensor Arm

Service Note Number: C2003A-03, C2015A-03, C2005A-07, C2040A-07, C3134A-01

Serial Numbers Affected: AAAA000000 - ZZZZ999999

Description: Improperly removing jammed media can damage or break the Input Paper Sensor Arm (RF5-0601-000CN). As a result, media will jam frequently or constantly, regardless of whether media is fed from the lower cassette or from the manual feed slot.

Solution: Replace the Input Paper Sensor Arm. This sensor arm has been re-designed to prevent it from breaking even if a media jam is removed improperly.

Note

When replacing the Input Paper Sensor Arm, the replacement sensor arm may bind with the High Voltage Shield (RB1-2987-000CN). If this occurs, also replace the High Voltage Shield. Due to the increased size of the redesigned Input Paper Sensor Arm, it may come into contact with the flange on the original version of the High Voltage Shield. To prevent this from happening, a flange on the original version of the High Voltage Shield has been removed.

Broken Printer Frame - Paper Cassette Support Guides

Service Note Number: C2003A-04, C2015A-04, C2005A-08, C2040A-08, C3150A-02, C3155A-02, C3134A-02, C3932A-02, C3935A-02

Serial Numbers Affected: AAAA000000 - ZZZZ999999

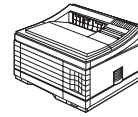
Description: A customer can damage a printer by improperly removing the paper cassette. Improper removal usually consists of pulling up or pushing down excessively on the paper cassette before it is fully removed from the printer. Improper removal can break off the support guide(s) the frame of the printer, which may cause an increase in media jams and image skew, or may crease printed output.

Solution: Install the paper cassette support guide repair kit (5062-4662). First, be sure that the printer is placed on a firm, flat surface. Apply the kit (a three-piece appliance) directly to the paper cassette. The kit includes two bottom supports, a left-side support, and instructions.

Procedure: To ensure correct installation, before starting the procedure go through the steps below carefully without removing the adhesive backing from the supports:

1. Remove the paper cassette and place it on a flat surface.
2. Remove the adhesive backing from one of the bottom supports. Carefully place the support in one of the two positions.
3. Remove the adhesive backing from the other bottom support and place it in the remaining position.
4. Remove the adhesive backing from the left-side support. Carefully place the support in position.
5. Replace the paper cassette in the printer; check for proper operation.

LJ 4 Plus/4M Plus and LJ 4/4M



Paper Jams in Optional 500-Sheet Lower Cassette

Service Note Number: C2001A-01

Description: Misadjustment of the counter-balance adjustment on the 500-sheet optional lower cassette is a leading cause of paper jams. Either no-picks or multi-picks will occur, resulting in 13 and/or 41 errors.

Solution: Follow these instructions to adjust the cassette:

1. Fill the cassette completely full of paper of all the same weight (do not overfill). Make sure the paper is flush against the rear paper guide and that it rests under the front left corner tab.
2. Push down and release the front edge of the paper in the cassette until it bounces. If the cassette is adjusted correctly, the purple-colored indicator will stop in the very center of the indicator window. If you need to adjust it, rotate the knob and try “bouncing” the paper once again. Repeat these steps until the purple indicator stops in the center of the window.

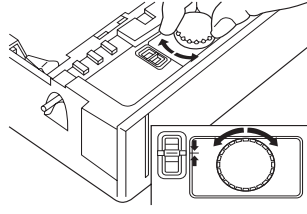


Figure 9-3 Adjustment of the optional 500-sheet lower cassette

Repeat this process any time you change the paper basis weigh. Note that if the indicator behaves erratically, the paper may not be flush against the rear paper guide.

Paper Jam Errors 13 and 41.3 (multi-feed jams)

Service Note Number: C2001A-02

Associated Part Numbers: RA2-1999-000CN - corner tab

Description: LaserJet 4/4M only: Multi-feed paper jams (where more than one sheet of paper is picked from the paper tray) may become a recurring problem if customers use marginal paper (paper that does not meet HP specifications or that is damaged).

Solution: A modified corner tab was designed to correct this problem. Service Note C2001A-02 provides instructions for obtaining and installing free replacement corner tabs (in quantities from one to ten). The redesigned corner tab is installed in the 250-sheet paper tray, and is specifically designed to increase the paper-feeding performance of lighter weight (60-75 g/m^2 [16-20 lb]) papers. The original tab should be retained if the customer intends to use heavier weight papers in the future.

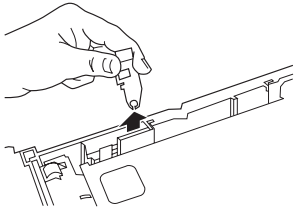


Figure 9-4 Installing the corner tab

To obtain free tabs, phone HP Distribution:

United States: (970) 339-7009 Europe: (+31) 20 682-8291

Accordion Jams in Output Assembly

Service Note Number: C2001A-03A

Associated Part Numbers: RF5-0425-000CN, quantity of 4

Description: Accordion jams occur on the LaserJet 4 as the paper leaves the fusing assembly and enters the output stacker. The leading edge of the paper may catch in the output stacker and fold up like a fan or an accordion. A defective output roller holder that was used in the manufacture of a number of printer caused this problem. Only U.S.-built printers had this flawed roller holder. European and Asian- built printers did not. The following ranges of serial number may contain the defective roller holder:

- USBB074298 through USBB081811
- USBB099540 through USBB190983
- USBC085451 through USBC093129
- USBC112090 through USBC234957
- USTB000101 through USTB007397
- USTC000101 through USTC010123

Solution: Replace the defective output rollers with the redesigned rollers.

Note

Your customer may have a printer with serial numbers within this range and never experience the “accordion jam” problems. Note that the likelihood of these jams increases with the use of somewhat marginal papers (papers with a poor leading-edge cut). The roller holders do not need to be replaced if accordion jams are not occurring.

500-Sheet Lower Cassette (Tray 3) Shim Improves Paper Handling with Letter and Legal Size Paper

Service Note Numbers: C2001A-04, C2021A-04, C2037A-02, C2039A-02, C3916A-03, C3917A-03, C3952A-03

Associated Part Numbers: C3916-67906/Lower Cassette (Tray 3) Shim Kit

Situation: The lower cassette (Tray 3) accessory of the LJ4, LJ4+, and LJ5 series printers requires some user setup and adjustment to operate properly.

If the lower cassette tray is not set up properly and monitored for proper adjustment, the performance of the tray can suffer. The performance degradation typically exhibits itself as 13 PAPER JAMS and/or 41.3 ERRORS from the lower cassette tray. The *500-Sheet Feeder Paper (Tray 3) Installation Guide* provides instructions on properly adjusting the tray. The bottom plate of the lower cassette also contains illustrated installation instructions. For a variety of reasons, the tension adjustment and/or the right-side guide adjustment are often not correct. Testing indicates that improper adjustment of the right-side guide is the major cause of performance problems with the lower cassette tray. This problem has been found to predominantly affect letter/legal size paper.

Solution: HP has developed a right-side shim that enhances the performance of the lower cassette (Tray 3). The shim is designed to be used with letter/legal size paper. The shim installs in the lower cassette (Tray 3) between the side-guide adjustment and the side rail of the tray. The shim stiffens the side guide and positions the guide properly for letter/legal size paper. Installing the shim improves the performance of the lower cassette (Tray 3).

Note

This shim kit will not solve all paper feed problems from the lower cassette. All the standard media checks should be performed to assure media meets HP specifications, is not damaged, and so forth. The adjustment for paper tension should also be set properly for the weight of the paper that is installed in the tray.

Action: A Lower Cassette Shim Kit has been designed that includes the shim and an instruction sheet for proper installation. The shim kit is user-installable and available to service providers or end users. The shim kit can be ordered free of charge by calling HP Distribution at (970) 339-7009. Callers should request the HP Shim Upgrade Kit, part number C3916-67906. The shim kit will work only for customers using letter or legal-size paper.

False Paper Jams (last page only)

Associated Part Numbers: RB1-2133-000CN

Description: If the printer is giving a false paper jam message on only the last page, and a piece of paper cannot be found in the printer, verify that the paper-out sensor flag is still attached. To locate the flag, remove the 250-sheet paper cassette and look for a small, black piece of plastic hanging down in the center of the slot.

Solution: If this flag is missing, the printer will give a false paper jam message. If this occurs, replace the sensor flag.

Image Skew or Paper Damage (feeding from the 250-sheet tray)

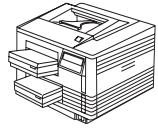
Service Note Number: NONE

Associated Part Numbers: RF5-0369-000CN - hinge (front), RB1-2259-000CN - hinge (back)

Description: Skewed print images, and/or damage to the left edge of the paper can result when a paper weight is missing from the cavity of the 250-sheet paper tray. To check for this problem, remove the 250-sheet cassette and look inside the cavity. You should see a “V”- shaped, hinged plastic weight hanging down from under the high voltage power supply area. This weight puts a slight amount of pressure in the paper and prevents the paper from skewing as it is fed into the paper path.

Solution: Replace the weight.

LaserJet 4Si



Missing Scan Lines, 70-110 mm from Top of Page

Service Note Number: C2010A-02

Associated Part Numbers: RG5-0381-180CN (Job Offset Assembly)

Description: An intermittent print-quality defect may occur when the job-offset feature is used to print multiple-page jobs. Missing scan lines, approximately 70 to 110 mm from the top of the page, are caused when the bumper that is mounted on the Job Offset Assembly becomes deformed. This causes the assembly to “bang” to the left. As a result, the beam-to-drum mirror mounted on the printer's top cover vibrates, resulting in what appears to be missing scan lines. This defect appears only if more than three pages are being printed **and** the job-offset feature is being used. The first and second page do not exhibit the defect.

Solution: Replace the Job Offset Assembly.

Preventing Jams: Face Up or Output Stacker

Service Note Number: C2010A-03

Associated Part Numbers: RB1-0557-040CN (Paper Guide)

Description: When printing jobs to the face-up tray with an output stacker (C2801A), the potential exists for an increase in the number of paper jams. The jams are a result of paper being deflected incorrectly by the paper guide of the delivery cover assembly.

The adhesive used to secure the gray pad on the paper guide causes this problem. Over time, the adhesive causes incorrect paper deflection and jamming. Typically the left leading edge of the paper may catch on the upper edge of the rear exit slot of the delivery cover assembly and cause the media to skew and jam.

The error also can occur when the upper tray has been selected and the output is delivered to the lower tray.

Solution: The rear delivery cover assembly has been redesigned so that the pad is no longer needed. Either of the two fail conditions cited above can be corrected by replacing the paper guide on the delivery cover assembly.

When printing to the face-up tray or output stacker, the paper-handling performance will be improved because the paper is routed more precisely through the paper slot in the delivery cover assembly.

Perform the modification only when the specified failure occurs. Use the procedures shown in the source note.

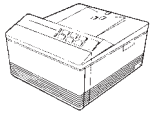
Paper Jamming and Feed Problems

Associated Part Numbers: RF5-0041-000CN (Paper Feed Rollers)

Description: Since introduction, the paper feed rollers have been replaced more frequently than any other part. These rollers have been life-tested at nearly 300K pages without any problem. Theoretically, these parts should not need replacement until regularly scheduled (200,000 page) user maintenance. Premature wear is likely to be caused by media that does not meet specifications.

Solution: Replace the paper feed rollers and consult with the customer to ensure that the media used meets specifications and is not causing undue printer wear.

LJ IIIP, IIP Plus, IIP



Moaning Sound in Separation Pad

Associated Part Numbers: RG1-1912-080CN - separation pad

Description: After a certain amount of printer usage, the combination of separation pad wear and the use of smoother papers can cause a vibration in the separation pad assembly. The vibration occurs at a resonant frequency while paper is being fed into the printer. This resonance is amplified by the lower frame pan, and results in an audible moaning sound that continues the entire time the page is being fed into the printer. An important diagnostic clue is the length of time that the noise is audible. Note that some noise during the first second of paper pickup from the MP tray is considered normal.

Solution: A production change was made to the separation pad to minimize the occurrence of the moaning sound in the separation pad. The improved pad is indistinguishable from the previous pad to the naked eye. The former part number, RG1-1912-000CN, can no longer be ordered. The new part number is RG1-1912-080CN.

Note

This problem may still be exhibited when the customer uses excessively smooth paper or the separation pad is worn.

Compressed Print

Associated Part Numbers: RG1-1777-000CN - drum drive gear assembly

Description: On rare occasions, you may see compressed print on a LaserJet IIP. The print may be compressed anywhere on the page. It may look like text compressed into a thin line or appear as a gap between lines. Troubleshooting can be difficult because the problem is usually intermittent.

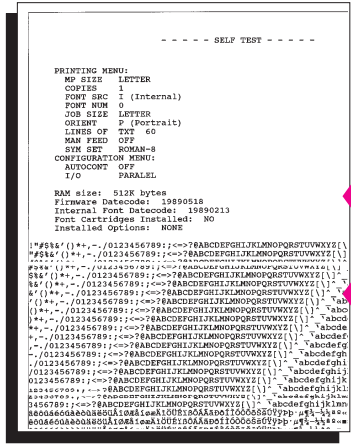
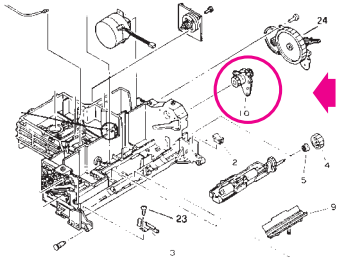


Figure 9-5 Gap between lines and compressed line on the same page

Why does this happen? When something causes the toner cartridge to freeze up, the shaft on the drum drive gear continues to turn for a short period of time but the gear does not. This can later cause the toner cartridge drum to stop turning momentarily due to slippage between the deformed gear and the shaft (even though the rest of the printer is functioning normally). This results in compressed print or in gaps in the print. Once the shaft has turned, the problem may recur intermittently even after the toner cartridge is replaced.

Solution: Replace the drum drive gear assembly, part number RG1-1777-000CN.



Drum Drive Gear Assembly (Item #10 on figure 8-5, LaserJet IIP/IIIP Service Manual)

Figure 9-6 Drum drive gear assembly

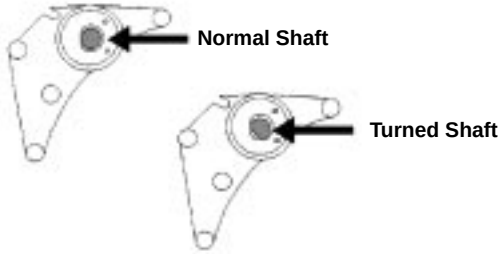


Figure 9-7 Good versus bad drum drive assembly

Continuous “PS Busy”

Description: On rare occasion, when using the HP PostScript Cartridge (HP 33439P/Q) with a LaserJet IIP, a continuous PS BUSY condition can occur if auto continue is ON and the document being printed is longer than 1 or 2 pages. If the page is printed, this condition may result in missing lines, shifted text, and some malformed letters. If the faulty pages are ejected, the printer flashes `PS BUSY` on the display indefinitely and no more text is printed.

This error condition can result from a fuser discharge phenomena that causes a `41 ERROR` in the LaserJet IIP. Since the PostScript mode of operation does not report errors in the same manner as PCL, the `41 ERROR` is not displayed and the printer displays a continuous `PS BUSY` status.

Note

Many other conditions can cause a similar `PS BUSY` symptom. However, if a LaserJet IIP printer exhibits this problem, a bad fusing assembly is the likely culprit.

Incompatibility of New Fusing Assembly Component

Service Note Number: 33471A/AB-04, 33481A/AB-04, C2007A-02

Associated Part Numbers: RF1-3305-000CN

Description: Some changes have occurred to the fusing assemblies used in the HP LaserJet IIP, IIP+ and IIIP printers. All assemblies are fully compatible with all LaserJet IIP/IIP+/IIIP printers, with the exception of the **original** fusing assembly used in the LaserJet IIP printer (see Service Notes 33471A-02B and 33471AB-01B for details). Changes made in the later assemblies have made some component-level repairs unfeasible.

Solution: Newer fusing assemblies are identified by a missing blue wire from the center conductor of the thermistor assembly connector. If the thermistor or its cable assembly (including the connector) requires replacement in a newer fusing assembly, the correct replacement part number is RF1-3305-000CN. Replacements are not available for the right connector holder (item 14 in the LJIIP/IIP+/IIIP Service Manual), and they are not available for the plates to which the diode leads that are soldered on the right end of the assembly. If these components are damaged, replace the entire fusing assembly. Use all other assembly components documented in Table 8-8 of the LaserJet IIP/IIP+/IIIP service manual to perform component repair of any fusing assembly.

LJ II, III



Potential Safety Issue Following Fuser Repair

Service Note Numbers: 33440A/AB/AU-12, 33447A/AB/AU-09, 33449A/AB-05, 33459A/AB-03

Associated Part Numbers: RA1-3959-000CN, RA1-3960-000CN

Description: There have been reports of damage incurred to the left and/or right fusing assembly covers of the LaserJet II, IID, III, and IIID printers as a result of repair or replacement of the fusing assembly. A primary function of these covers is to protect the user from hazardous line voltages (100-240 VAC).

These voltages are routed to the fusing lamp via wires fastened to metallic strips just beneath these covers. The wires, strips, and screws used to fasten these wires are all exposed if the covers are missing or damaged. The line voltage used to power the fusing lamp is present at these exposed surfaces as long as the printer is turned on, even when the top cover is open.

Solution: When servicing these printers, ensure that the left and right fusing assembly covers are undamaged and properly fastened in place upon completion of the repair. The cover can be damaged if all the wires routed beneath the covers are **not** positioned properly prior to tightening the cover screws. Damage can occur during shipment or through other mishandling of the fusing assembly. The replacement part numbers are as follows:

Cover, Left, Fuser	RA1-3959-000CN
Cover, Right, Fuser	RA1-3960-000CN

Internal Cabling Problems

Description: Four cable harnesses located in the LaserJet series II and LaserJet III printers may be the cause of certain printer failures.

Solution: Replace these cables before attempting to replace expensive assemblies. Part numbers for the cable assemblies appear in the following table.

Part Number	Description	Error Conditions
RG1-0908-000CN	Laser scanner cable assembly	41 51 52 scanner motor whining, distorted print, lines across page.
RG1-0907-000CN	Fusing assembly cable (long, 7-wire)	13, 50, ghosting, open thermoprotector.
RG1-0906-000CN	High-voltage power supply cable (8-wire)	Constant ozone production, repetitive print defects, improper toner-low sensing.
RG1-0912-000CN	AC power module cable (short, 4-wire)	50, with a cold fuser.

The LaserJet IID/IIID scanning cable assembly may also cause errors 41, 51, or 52. Cable assembly part numbers are: **LaserJet IID**: RG1-1370-000CN **LaserJet IIID**: RG1-2067-000CN.

The printer test tool (see chapter 4) is useful in detecting problems in high voltage power supply.

Light-Brown Stain on Front Side of Duplexed Page

Service Note Number: 33447A/AB/AU-10,33459A/AB-04

Associated Part Numbers: RG1-1356-000CN, RG1-2498-000CN

Description: A light-brown streak can appear on the front side of a duplexed page when the duplex feature is not used for several weeks. The stain is approximately 10 mm (3/8" wide) and can be seen along the entire length of the page, approximately 38 mm (1.5") from the right edge of the paper. Some have described the stain as being some sort of oil contamination, such as excess lubricant on the fuser cleaning pad.

The oblique duplex registration roller in the LaserJet IID and IIID printer requires a preservative to help protect it from the long-term effects of normal usage and ozone exposure within the printer. Without this preservative, the roller would fail prematurely and, as a result, would not continue to feed paper properly through the duplexing portion of the printer. This preservative can accumulate on the surface of the roller if the duplexer is not used for extended periods of time. The accumulation may result in the light-brown stain on the “front” side of a duplexed page.

Solution: The problem will typically resolve itself after 10-50 pages have been run through the duplex portion of the printer. This process cleans the surface of the oblique roller. If you must replace the roller, prior to installing the new roller in the printer, be sure to rub the surface of the new roller with some clean paper to remove any excessive build-up of the preservative. Do **not** clean the roller with alcohol or other cleaning solutions. Doing so would remove the preservative altogether, leading to premature failure of the new roller.

If the oblique roller (RG1-1356-000CN) requires replacement, be sure to also check the inside portion of the white plastic alignment guide. Paper being run through the duplexer and forced into the side of the alignment guide can eventually wear a groove into the plastic. If a groove has developed, replace the entire lower duplex guide assembly (RG1-2498-000CN). If it is not replaced, subsequent duplex paper jams can result when paper gets caught in the groove. (Contrary to the implication in the service manual, note that the lower duplex guide assembly does **not** include the oblique paper alignment roller.)

Misalignment of Duplexed Images

Description: Sometimes, a customer may notice that the images on the front and back of a duplexed page may not exactly align when held up to the light. This is most noticeable when printing on pre-printed forms or when the document has a border. The most prevalent reason for this misalignment is the process of fusing the toner into the page.

The first time paper passes through the fusing assembly, it is heated and almost all the moisture is removed. This causes the paper to shrink. Therefore, the physical size of the paper and the printed image are no longer the same when the second image is placed on the page. This results in the second image being slightly larger than the first.

The manufacturing tolerances for the registration of the paper also cause misalignment between the front and back images. The current registration specification for these printers is 4.2 mm (+/- 2.5 mm) from the leading edge of the paper to the first printed dot. Reducing this tolerance would increase the cost of the printer exponentially.

Duplex Jamming: Duplex Drive Roller Assembly

Associated Part Numbers: RG1-1345-060CN

Description: The lower and upper duplex guide assemblies (figures 8-24 and 8-25 in the IID/IIID service manual) are used to properly position the paper left-to-right prior to its passing a second time through the printer. When this is performed, the leading edge of legal-sized paper may buckle slightly, causing it to dive between the lower duplex guide and the duplex drive roller assemblies (figures 8-24 and 8-26 in the IID/IIID service manual).

A clear plastic strip was attached to the drive assembly to prevent paper from diving into the gap between these assemblies. With use, a slight nick may develop in this plastic strip, leading to paper jams. If such a nick is the cause of a jamming problem, it can be felt with your fingernail.

Solution: This problem was fixed by extending the metal base of the duplex drive roller assembly, thus alleviating the need for the plastic strip. The part number of this new assembly is RG1-1345-060CN. If paper is jamming in the duplexer just prior to the duplex drive roller assembly, install a new assembly.

Duplex Jamming: Misaligned Switchback Assembly

Associated Part Numbers: RA1-8420-000CN

Description: Another possible cause of paper jams in the duplexer is a misaligned switchback assembly (figure 8-16A/B in the *IID/IIID Service Manual*). This is often the result of using the switchback assembly as a handle while lifting the printer, or shipping the printer without the packing rods installed in the switchback assembly. The switchback assembly should never be used as a handle when the printer is being moved. If the printer needs to be transported, install the packing rods to properly support the switchback assembly. If the rods have been disposed of or misplaced, they can be ordered from HP Parts Direct (800) 227-8164, part number RA1-8420-000CN.

Solution: To properly realign the switchback assembly, loosen the mounting screws and re-position the assembly until the switchback frame is parallel with the output slot at the rear of the printer.

Duplex Jamming: Worn Lower Duplex Guide Assembly

Associated Part Numbers: RG1-2498-000CN

Description: Some time after 60,000 pages have been printed (and depending upon the paper being used), a groove may develop in the white plastic guide in the lower duplex guide assembly (figure 8-24 in the IID/IIID service manual). The assembly is used to perform the left-to-right alignment of the paper during its pass through the duplexer. This guide can be best observed by removing the printer's cover panel just below the switchback assembly. If a groove has been cut into the plastic, paper will tend to hang up as it is dragged through the cut. If this failure occurs, replace the lower duplex guide assembly (RG1-2498-000CN).

Jams in the Power Envelope Feeder

Associated Part Numbers: 33457A/33458A

Description: Proper envelope feeding is a difficult task for most printers. Jams and multiple feeds are the most common complaints. HP has done extensive testing with a wide variety of envelopes and has concluded that while many envelopes are suitable for use with these feeders, many others are not. Some envelopes will cause jams on the order of one in six, while others may not experience a single jam in a thousand!

Can HP recommend a specific envelope to use for diagnostic purposes? Unfortunately, it is not that simple. Envelopes within a particular region are manufactured by local converters. Though a specific envelope may perform well in one region, there is typically enough variance in the manufacturing process that the same brand of envelope may not be at all suitable for use in another region! If you encounter regular complaints from customers that their envelopes will not work properly with the HP envelope feeders, it might be well worth your time to test a variety of envelopes in your area so that you can make some worthwhile recommendations. This will also help you identify an envelope to use for diagnostic purposes when troubleshooting potential envelope feeder problems.

Jams in the Power Envelope Feeder: 13 PAPER JAM Error Indication

Associated Part Numbers: RG1-0718-000CN (IID Paper Control PCA), RG1-2549-000CN (IIID Paper Control PCA)

The power envelope feeders use the Manual Feed Sensor (PS302) in the printer to determine whether an envelope has been fed correctly into the printer. If this sensor is faulty, a `13 PAPER JAM` message will be displayed after the feeder has been installed and the printer is turned on. This is because the printer determines that an envelope is "jammed" in its input area.

To resolve this problem, replace the paper control PCA (figure 8-33 in the *LaserJet IID/IIID Service Manual*).

10 Image defects

Overview

This chapter provides illustrations of image defects, lists suspected causes, and offers suggested remedies

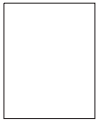
Using a Cleaning Page

For any print-quality defects, try using HP LaserJet Cleaning Utility to generate a cleaning page. The HP LaserJet Cleaning Utility is designed to remove excess paper and toner particles that can accumulate on the fusing assembly rollers. The buildup of toner/paper dust results in random spots on the front and back of the printout. Running the HP LaserJet Cleaning Utility at regular intervals can extend the useful life of the fuser and reduce service procedures. The HP LaserJet Cleaning Utility works on all HP monochrome printers, regardless of driver type.

To download the HP LaserJet Cleaning Utility file and obtain instructions on using it, access the HP website at **www.hp.com/cposupport/printers/software/lj123en.exe.html**.

Image Defect Table

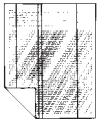
For more information, see the page numbers below each image.



Blank Page
(see page 276)



Black Page
(see page 278)



Thin Dark Vertical Black Lines
(see page 279)



Image Skew
(see page 280)



Faulty Registration
(see page 282)



Light Print/ Faded Print
(see page 284)



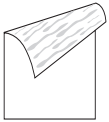
Horizontal Lines/ Repetitive Defect
(see page 286)



Poor Fusing/ Character Voids
(see page 287)



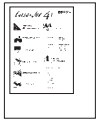
Background Scatter
(see page 288)



Back of Page Dirty
(see page 290)



Thin Vertical White Lines/ Stripes
(see page 291)



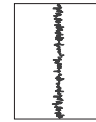
Improperly Sized Image
(see page 292)



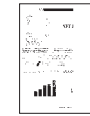
Smudged Band with Overprint (see page 293)



Toner Smear on Right/Left Side (see page 293)



Vertical Fogged Stripes (see page 294)



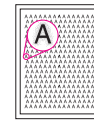
Right/Left Text Missing/Distorted (see page 295)



Distortion (see page 296)



Bubble Print (see page 296)



Leading Edge Scatter (see page 297)



Dropout (see page 298)



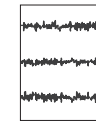
Compressed Print (see page 299)



Portion of Page Blank (see page 299)



White Horizontal Line (see page 300)



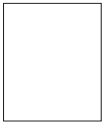
Horizontal Fogged Stripes (see page 300)



Wavy Print (see page 301)

10

Blank Pages



All Printers

- The toner cartridge is empty or defective.
- The sealing tape has been left in the toner cartridge.
- The high-voltage power supply (HVPS), contacts, or cable is bad. **LJ 4L and 4P:** The HVPS, AC power module, and the DC controller are all on the same board.
- The laser shutter arm or beam-to-drum mirror is broken.
- The transfer roller is defective.
- The direct-current (DC) controller is defective.
- Occasional blank pages are being printed.
  - Check the software, sharing device, or network settings. If the printer is feeding multiple pages, the paper may not meet HP specifications.
- There are multiple paper feeds.

2686A, 2686D

- The transfer corona wire is broken.

II, IID, III, IIID

- The transfer corona wire or assembly is bad.
- The toner cartridge or HVPS connections are bad.
- The HV power supply cable is defective.
- The toner cartridge drum is not rotating.
  - Replace the toner cartridge and inspect the gears.
- The laser/scanner assembly or cable is bad.
- The hinge brackets of the top cover are bent.

IIP, IIP+, IIIP

- The laser interlock tab of the toner cartridge is broken.
  - Replace the laser cover assembly (RG1-1773-000CN).
- The transfer roller assembly is defective.
- The HV PCA or HV contact cable is defective.

IIP Only

- There is an error 41 and the serial number is between 2925J0000 and 3047J9999.
  - Replace the fusing assembly.

IIISi/4Si, 4, 4 Plus, 4L, 4P

- The transfer roller assembly is defective.
- The HV PCA or HV contact cable is defective.
- The DC controller is defective

Black Pages



All Printers

- The toner cartridge is improperly installed or is defective.
- The HV contacts are dirty or the HV PCA is defective
  - Clean the HV contacts or replace the HV PCA.
    LJ 4L and 4P: The HVPS, AC power module, and DC controller are all on the same board.
- The DC controller is defective.
- The laser/scanner cable or assembly is defective.

5L, 5P, 6P, 6L

- Light is leaking into the printer

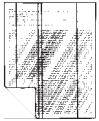
IIP, IIP+, IIIP

- The fiber optics cable is defective.

4L, 4P, 4V

- Light is leaking into the printer.

Thin, Dark, Vertical Black Lines



All Printers

- The toner cartridge is defective.
  - Check for a thin scratch around the print drum. If present, replace the toner cartridge.
- The primary charging roller is dirty because of a defective cartridge.
  - Replace the cartridge.
- Paper does not meet HP specifications.
- The static eliminator teeth are contaminated or defective.
  - Clean the printer.
- The fuser cleaning pad or fusing assembly is defective.

Image Skew



All Printers

- The paper is loaded incorrectly.
- The media does not meet HP specifications.
- The rollers or separation pads are worn.

5Si

- The pickup and separation rollers are worn.
- The registration assembly is dirty or defective.
- The drive gears in the drive train assembly are defective.

5L

- The LC, PC, or MP pickup rollers are worn.
- The separation pad is worn.
- The LC or input feed roller is worn.
- The pickup, oblique, or registration roller is worn.
- The pickup or registration roller is worn.

5L, 5P, 6P, 6L

- The paper guides need to be adjusted.
- The separation pad and/or pickup roller are worn or dirty.

2686A, 2686D

- The leading edge of the paper is curled.
  - Replace with another ream of paper.
- The paper tray is defective.
- The laser/scanner unit is misaligned.
- The paper input door is misaligned
- The registration assembly is defective.

II, IID, III, IIID

- The paper and paper tray are not installed correctly.
- The feed roller assembly is worn.
- The registration assembly is defective.

IIISi, 4Si

- The registration assembly is dirty or defective.
  - Replace the separation pad.
- The drive gears in the drive train assembly are defective.
  - Replace the LC or the input feed roller.

4, 4 Plus

- The beam-to-drum mirror requires an adjustment.

4L, 4P

- The paper guides need to be adjusted.
- The fuser cleaning pad or fusing assembly is defective.

Faulty Registration



All Printers

- The media does not meet HP specifications.
- The paper is loaded incorrectly or the paper guides are not adjusted correctly.
- The leading edge of the paper is curled.
  - Replace with another ream of paper.
- The paper is overloaded.
- The feed rollers are worn.
- The registration assembly is dirty or defective.
- The drive gears are worn or broken.
- The input paper sensor is defective.

5L

- The first dot row of the page is not 2 mm (+/- 1 mm) from the leading edge of the page on engine test print.
  - A registration adjustment is required (VR202 on DC Controller).

5P, 6P

- The first dot row of the page is not 2 mm (+/- 0.5 mm) from the leading edge of the page.
  - A registration adjustment is required (VR301 on DC Controller).

2686A, 2686D

- The registration shutter assembly is sticking or defective. (The white nylon rollers should turn freely.)
  - Remove the rubber bumper on the shutter. If the problem persists, replace the registration shutter assembly.
- The paper tray is defective.
- The laser/scanner unit is misaligned.

II, IID, III, IIID, IIISi, IVSi, 4V

- The feed roller assembly is worn.
  - The registration solenoid is stuck
- Replace the paper control PCA.
- The registration assembly is defective.
- The paper tray is defective.
- The input sensor is defective.

IIP, IIP+, IIIP

- The first dot row of the page is not 3 mm (+/- 1 mm) from the leading edge of the page.
  - A registration adjustment is required (VR201 on DC Controller).
- The drive gears are worn or broken.
- The input paper sensor is defective (PS1).

4, 4 Plus

- The first dot row of the page is not 2 mm (+/- 1 mm) from the leading edge of the page on engine test print.
  - A registration adjustment is required (VR202 on DC Controller).
- The drive gears are worn or broken.
- The input paper sensor is defective (PS1).

4L, 4P

- The first dot row of the page is not 2 mm (+/- 0.5 mm) from the leading edge of the page.
  - A registration adjustment is required (VR301 on DC Controller).
- Drive gears are worn or broken.
- Pickup, oblique, or registration rollers are worn.

Light Print/Faded Print



All Printers

- The media does not meet HP specifications.
- The toner cartridge is low on toner or empty.
- The print density is improperly set.
- EconoMode is turned on.
- The transfer roller is defective.
- The HV PCA or HV contact assembly is defective.
- The DC controller is defective.

2686A, 2686D

- The transfer corona assembly is defective.
- The laser power is low.
  - Adjust the laser power; replace if necessary.
- The HV power supply is defective.
- The DC controller PCA is defective.
- The drum sensitivity microswitch (MS3, MS4) is faulty.
  - Replace MS3, MS.

II, IID, III, IIID

- The transfer corona assembly is defective.
- The HV power supply or cable is defective.

IIP, IIP, IIIP, IIISi, 4Si

- The transfer roller is defective.
- The HV PCA or HV contact assembly is defective.
- The DC controller is defective.

4, 4 Plus, 4L, 4P, 4V

- EconoMode is on.
- The transfer roller is defective.
- The HV PCA or HV contact assembly is defective.
- The DC controller is defective.

Horizontal Lines/Repetitive Defect



All Printers

- The toner cartridge is not seated properly or is defective.
- The laser/scanner assembly is defective.
- The gear train is defective.
- The DC controller PCA is defective.
- A repetitive defect has occurred if the lines are repeated at consistent intervals.
  - Use the Repetitive Image Ruler to check the drum.
- The static teeth are dirty.
  - Clean the printer.

2686A, 2686D

- The laser unit is defective or is adjusted improperly.
- The DC power supply/main motor drive PCA is defective.

II, IID, III, IIID

- The laser/scanner cable to the DC controller is bad.
  - Readjust or replace the fiber optic cable.
- The fiber optics cable is bad or improperly seated.

IIP, IIP, IIIP, IIISi/4Si

- The fiber optics cable is defective or improperly seated (may be 41 or 51 ERROR).

Poor Fusing/Character Voids



All Printers

- The media does not meet HP specifications.
- The transparencies are defective.
- Printing is on the wrong side of the paper.
- The fuser is defective.
  - Replace the fuser.
- The transfer roller is defective.
- The HVPS or DC controller is defective.

2686A, 2686D

- The fuser cleaning pad is improperly installed.

II, IID, III, IIID

- The print density is set improperly.
  Set to “9" to minimize voids.
- Cover the interlock switch on the DC controller.
  - The switch is not present on all DC controllers (see Service Note 33449A-04, 33459A-02).
- The fuser cleaning pad is dry (non-HP).
  - Replace the cleaning pad.

Background Scatter



All Printers

- The print density is set improperly.
  - Adjust the print density to a darker setting.
- The toner cartridge is defective.
- Media does not meet HP specifications.
- The paper may be wet or too dry.
  - Optimum humidity should be between 40 and 60 percent.
- The inside of the printer is dirty.
- The transfer roller or corona is dirty or defective.

5Si

- Toner buildup has occurred in the fuser inlet guide.
  - Clean the fuser inlet guide.

5L/6L

- Printing is on the envelope seams.
  - Switch envelopes or move text to an area with no seams.
- Printing is on the wrong side of paper.
  - Turn the paper over. In the future, check to see if the ream label indicates the proper print side.
- The density or grayscale settings need to be adjusted.
  - Change the software density or grayscale settings to minimize the scatter effect.
- The entire background of the page is dark.
  - Clean the high-voltage contact points on the toner cartridge and transfer roller. If the error persists, first replace the laser/scanner unit, and then replace the DC controller.

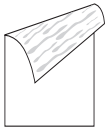
2686A, 2686D

- The grounding spring is set improperly.
  - Adjust to the center of the drum drive gear.
- The laser power is out of adjustment.
- The HV power supply is defective.
- The DC controller PCA is defective.
- The DCPS/main motor driver PCA is defective.

II, IID, III, IIID

- The primary corona wire is dirty.
  - Replace the toner cartridge.
- The transfer corona is dirty or worn.

Back of Page Dirty



All Printers

- Toner has leaked from the toner cartridge.
  - Replace the toner cartridge.
- The inside of the printer is dirty.
- The transfer roller is dirty.
- The feed rollers are dirty.
- The fuser is contaminated.

2686A, 2686D, II, IID, III, IIID

- The fuser cleaning pad is dirty.

II, III Only

- The corona wire is stuck “on.”
  - Use the test tool to verify (see chapter 4). Replace the cable HV power supply to the DC controller (P/N RG1-0906-000CN).

IIP, IIP, IIIP, IIISi, 4Si, 4, 4 Plus, 4L, 4P

- The input feed roller is dirty.
- There is toner build-up in the fuser assembly.
  - Use cleaning paper to clean the rollers. If needed, clean the thermoswitches (TS1 & TS2). Note: To create cleaning paper, print a self-test page.

Thin Vertical White Lines/Stripes



All Printers

- The toner cartridge is defective or nearly empty.
  - Gently shake the toner cartridge and reseat. If the error persists, replace the toner cartridge.
- Foreign obstacles are in the path of the laser beam.
  - Check the laser beam shutter.
- The printer needs to be cleaned.

5Si/5

- The focusing lenses in the scanner assembly may be dirty.
- The beam-to-drum mirror is contaminated.

2686A, 2686D

- The fuser cleaning pad is dirty.
- The transfer corona wire is dirty.
- The laser/scanner assembly is defective.

II, IID, III, IIID

- The transfer corona is dirty or worn.
- The beam-to-drum mirror is dirty.
- The laser/scanner assembly is defective.

IIISi, 4Si

- The focusing lenses in the scanner assembly may be dirty.

4, 4 Plus, 4L, 4P

- The beam-to-drum mirror is contaminated.

Improperly Sized Image



All Printers

- Check the microswitches in the paper tray.
- The paper size specified in the software does not match the actual paper size.

Smudged Band with Overprint



All Printers

- The gear train assembly in the main motor is not engaging with the toner cartridge drum gears.
  - Replace the gear train and/or main motor assembly.
- The fusing assembly is dirty or defective.
- The static teeth are dirty.
- The toner cartridge is defective.

Toner Smear on Right or Left Side of Page



2686A, 2686D

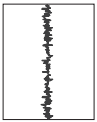
- The separation belt, separation roller or pinch roller is dirty.
- The toner cartridge is defective.

II, IID, IIID

- The primary corona wire in the toner cartridge is dirty.

.

Vertical Fogged Stripes



2686A, 2686D

- The conductive surface of the guide is worn, causing static charge.
  - The feed guide assembly (P/N RG1-1039-000CN) is defective.
- The primary corona wire is dirty.
- The toner cartridge is defective.
- The inside of the printer is dirty.

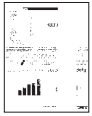
IIP, IIP, IIIP

- The media does not meet HP specifications.
- The fusing assembly is dirty or defective.
  - Use a self-test cleaning page to clean the fusing assembly, or replace the fusing assembly.

4, 4 Plus, 4V

- The media does not meet HP specifications.
- The fusing assembly is dirty or defective.
- The DC controller is defective.
- The static teeth are bent.

Right or Left Hand Text Missing/Distorted



All Printers

- A foreign object is in the path of the laser beam.

II, IID, III, IIID

- The toner cartridge is empty.
- The instruction label on the beam mirror shutter has come loose.
- The beam-to-drum mirror is bent or misaligned.
- The hinge brackets of the top cover assembly are bent.

Distortion



All Printers

- The toner cartridge is defective.
- The gear train is damaged.

2686A, 2686D

- There is a problem with the paper drive.
  - Check all parts of the drive mechanism, gear train, and motor.
- The main motor is defective.
- The DC power supply/main motor driver PCA is defective.

Bubble Print



All Printers

- The print density dial is not aligned properly with the HVPS.
  - Reseat the HV power supply PCA.

- The photosensitive drum inside the toner cartridge is not grounded.
  - Reseat the toner cartridge. Replace the toner cartridge. Reseat the HVPS. Replace the HVPS.
- The fuser is defective.
- The toner cartridge is leaking.
- Paper does not meet HP specifications.
- The HVPS is defective.

Leading Edge Scatter



All Printers

- The media does not meet HP specifications; a single sheet of paper may be defective.

Dropout



All Printers

- The fuser inlet guide is set improperly.
  - Replace the fuser inlet guide (see chapter 6 in the service manual).
- Paper is defective, improperly loaded, or does not meet HP specifications.
- The HVPS or transfer roller/wire is defective.

5L/6L

- The print density requires adjustment.
  - Adjust the print density through the software.
- The rollers and high-voltage contact points require cleaning.
- Blank spots appear on the page.
  - Replace the toner cartridge. If the spots persist, first replace the transfer roller, and then replace the DC controller.

Compressed Print



All Printers

- The toner cartridge is defective.
- The drive gear in the drum is broken or worn.

IIP, IIP+, IIIP

- The gear assembly of the drum drive is defective.

Portion of Page Blank



All Printers

- The page is too complex.
  - Reduce the complexity of the page or set Page Protect to On or Auto.
- There is not enough memory.
- The printer is printing is on legal paper, but the setting in the software is letter-size paper.

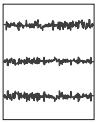
White Horizontal Line



5L/6L

- The toner cartridge is defective.

Horizontal Fogged Stripes



III, II

- The laser scanner cable is defective.
- The toner cartridge is damaged.
  - Replace the toner cartridge and HV cable.

2686A, 2686D

- The toner cartridge is defective.
- The HV PCA is defective.
- The ground contact to the toner cartridge is defective.

Wavy Print



All Printers

- The scanner unit is defective.

IIID, III, IID, II

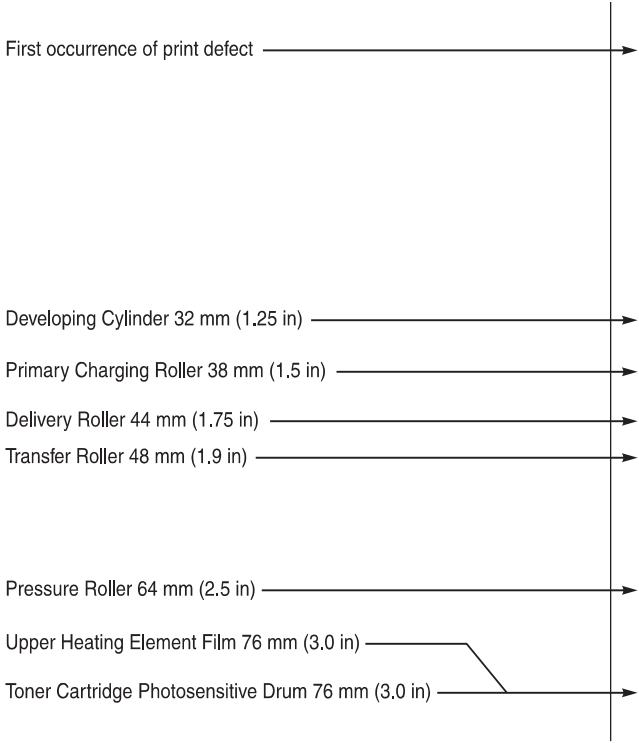
- The laser scanner assembly is defective.
- The laser scanner cable is defective.

2686D, 2686A

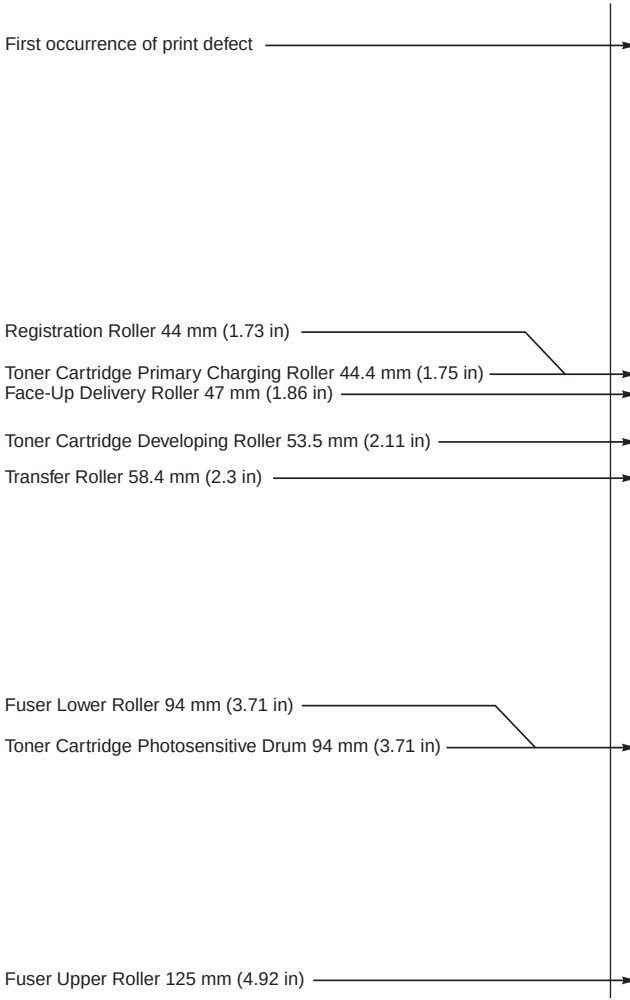
- The DC controller PCA is defective.

Repetitive Image Defect Ruler LJ 6L/5L

Use the ruler shown below to measure the approximate distances between repetitive image defects.

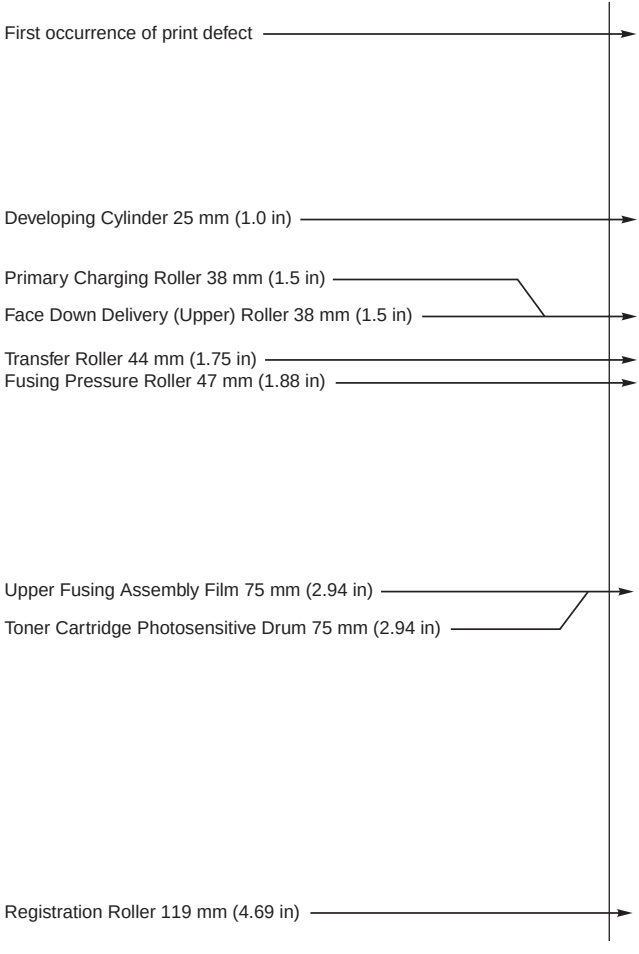

First occurrence of print defect
Developing Cylinder 32 mm (1.25 in)
Primary Charging Roller 38 mm (1.5 in)
Delivery Roller 44 mm (1.75 in)
Transfer Roller 48 mm (1.9 in)
Pressure Roller 64 mm (2.5 in)
Upper Heating Element Film 76 mm (3.0 in)
Toner Cartridge Photosensitive Drum 76 mm (3.0 in)

Repetitive Image Defect Ruler LJ 5Si


First occurrence of print defect
Registration Roller 44 mm (1.73 in)
Toner Cartridge Primary Charging Roller 44.4 mm (1.75 in)
Face-Up Delivery Roller 47 mm (1.86 in)
Toner Cartridge Developing Roller 53.5 mm (2.11 in)
Transfer Roller 58.4 mm (2.3 in)
Fuser Lower Roller 94 mm (3.71 in)
Toner Cartridge Photosensitive Drum 94 mm (3.71 in)
Fuser Upper Roller 125 mm (4.92 in)

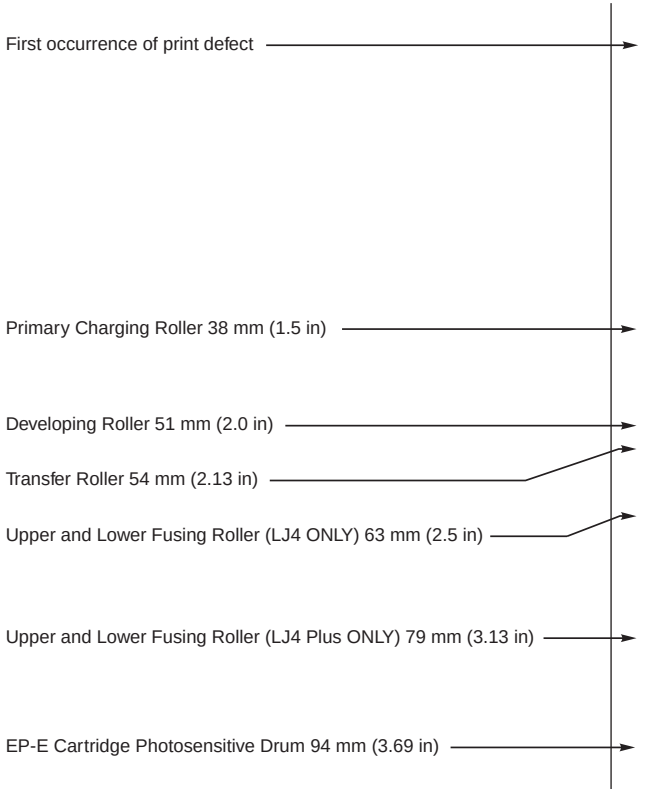
Repetitive Image Defect Ruler LJ 6P/5P

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Developing Cylinder 25 mm (1.0 in)
Primary Charging Roller 38 mm (1.5 in)
Face Down Delivery (Upper) Roller 38 mm (1.5 in)
Transfer Roller 44 mm (1.75 in)
Fusing Pressure Roller 47 mm (1.88 in)
Upper Fusing Assembly Film 75 mm (2.94 in)
Toner Cartridge Photosensitive Drum 75 mm (2.94 in)
Registration Roller 119 mm (4.69 in)

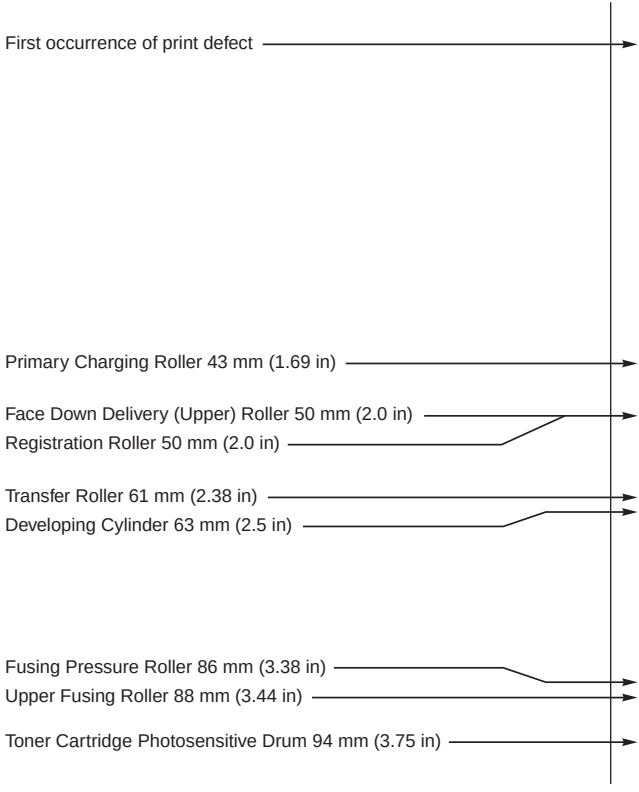
Repetitive Image Defect Ruler LJ 5

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Primary Charging Roller 38 mm (1.5 in)
Developing Roller 51 mm (2.0 in)
Transfer Roller 54 mm (2.13 in)
Upper and Lower Fusing Roller (LJ4 ONLY) 63 mm (2.5 in)
Upper and Lower Fusing Roller (LJ4 Plus ONLY) 79 mm (3.13 in)
EP-E Cartridge Photosensitive Drum 94 mm (3.69 in)

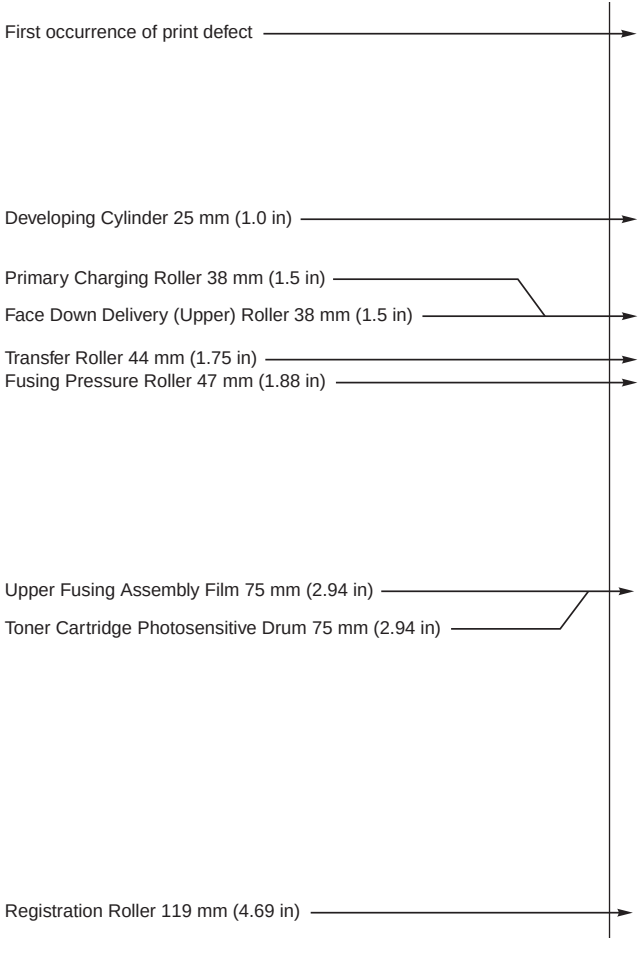
Repetitive Image Defect Ruler LJ 4V

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Primary Charging Roller 43 mm (1.69 in)
Face Down Delivery (Upper) Roller 50 mm (2.0 in)
Registration Roller 50 mm (2.0 in)
Transfer Roller 61 mm (2.38 in)
Developing Cylinder 63 mm (2.5 in)
Fusing Pressure Roller 86 mm (3.38 in)
Upper Fusing Roller 88 mm (3.44 in)
Toner Cartridge Photosensitive Drum 94 mm (3.75 in)

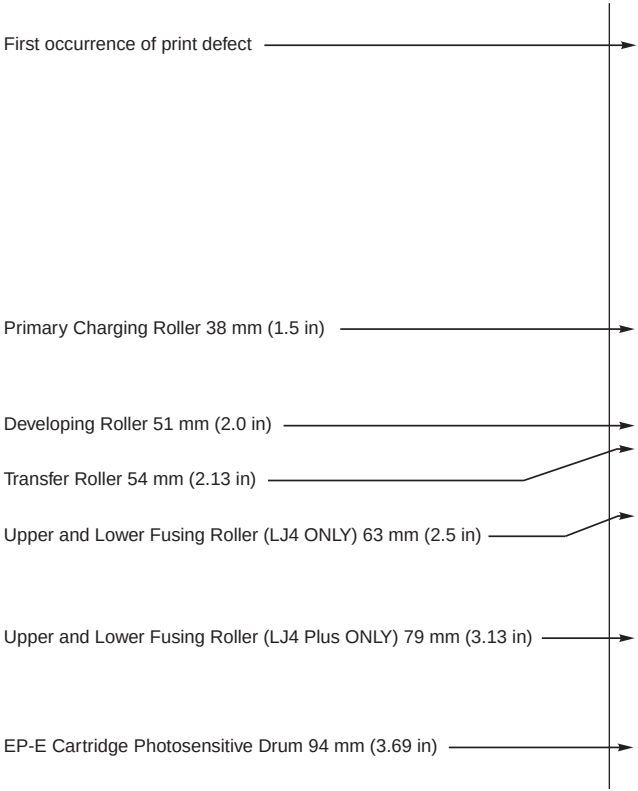
Repetitive Image Defect Ruler LJ 4P, 4L

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Developing Cylinder 25 mm (1.0 in)
Primary Charging Roller 38 mm (1.5 in)
Face Down Delivery (Upper) Roller 38 mm (1.5 in)
Transfer Roller 44 mm (1.75 in)
Fusing Pressure Roller 47 mm (1.88 in)
Upper Fusing Assembly Film 75 mm (2.94 in)
Toner Cartridge Photosensitive Drum 75 mm (2.94 in)
Registration Roller 119 mm (4.69 in)

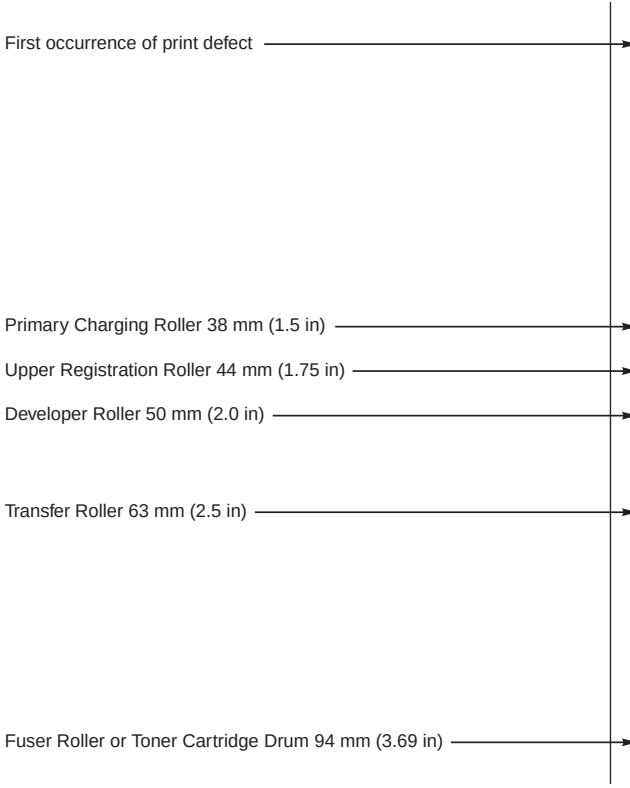
Repetitive Image Defect Ruler LJ 4+, 4

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Primary Charging Roller 38 mm (1.5 in)
Developing Roller 51 mm (2.0 in)
Transfer Roller 54 mm (2.13 in)
Upper and Lower Fusing Roller (LJ4 ONLY) 63 mm (2.5 in)
Upper and Lower Fusing Roller (LJ4 Plus ONLY) 79 mm (3.13 in)
EP-E Cartridge Photosensitive Drum 94 mm (3.69 in)

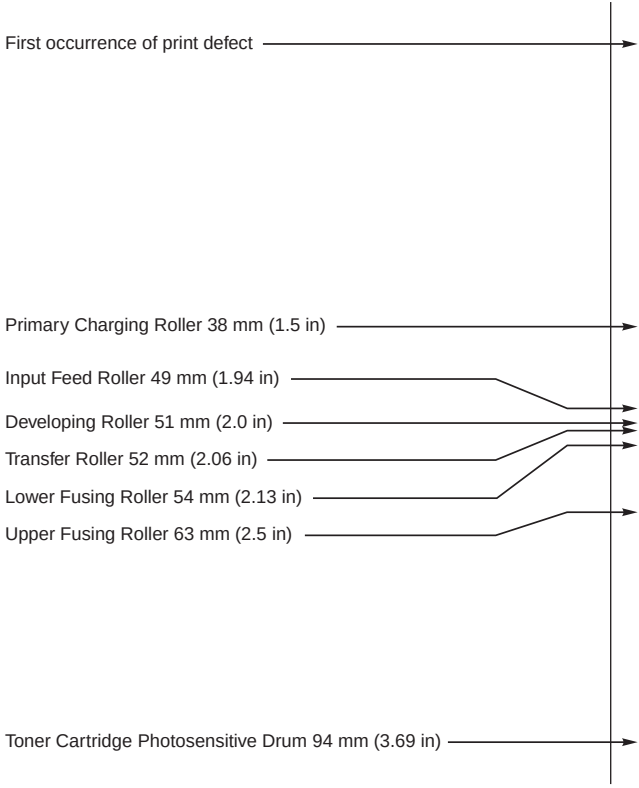
Repetitive Image Defect Ruler LJ 4Si, IISi

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Primary Charging Roller 38 mm (1.5 in)
Upper Registration Roller 44 mm (1.75 in)
Developer Roller 50 mm (2.0 in)
Transfer Roller 63 mm (2.5 in)
Fuser Roller or Toner Cartridge Drum 94 mm (3.69 in)

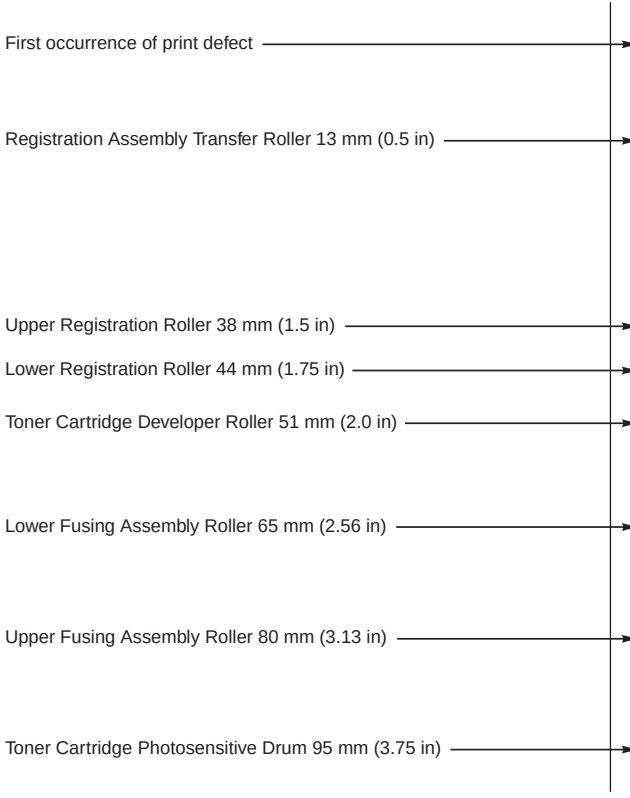
Repetitive Image Defect Ruler IIP, IIP+, IIP

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Primary Charging Roller 38 mm (1.5 in)
Input Feed Roller 49 mm (1.94 in)
Developing Roller 51 mm (2.0 in)
Transfer Roller 52 mm (2.06 in)
Lower Fusing Roller 54 mm (2.13 in)
Upper Fusing Roller 63 mm (2.5 in)
Toner Cartridge Photosensitive Drum 94 mm (3.69 in)

Repetitive Image Defect Ruler IID, III, IID, II

Use the ruler shown below to measure the approximate distances between repetitive image defects.


First occurrence of print defect
Registration Assembly Transfer Roller 13 mm (0.5 in)
Upper Registration Roller 38 mm (1.5 in)
Lower Registration Roller 44 mm (1.75 in)
Toner Cartridge Developer Roller 51 mm (2.0 in)
Lower Fusing Assembly Roller 65 mm (2.56 in)
Upper Fusing Assembly Roller 80 mm (3.13 in)
Toner Cartridge Photosensitive Drum 95 mm (3.75 in)

11 Wiring diagrams

Overview

The chapter provides wiring diagrams for printers supported in this guide.

Figure 11-1 Wiring Diagram: HP LaserJet 6L and 5L

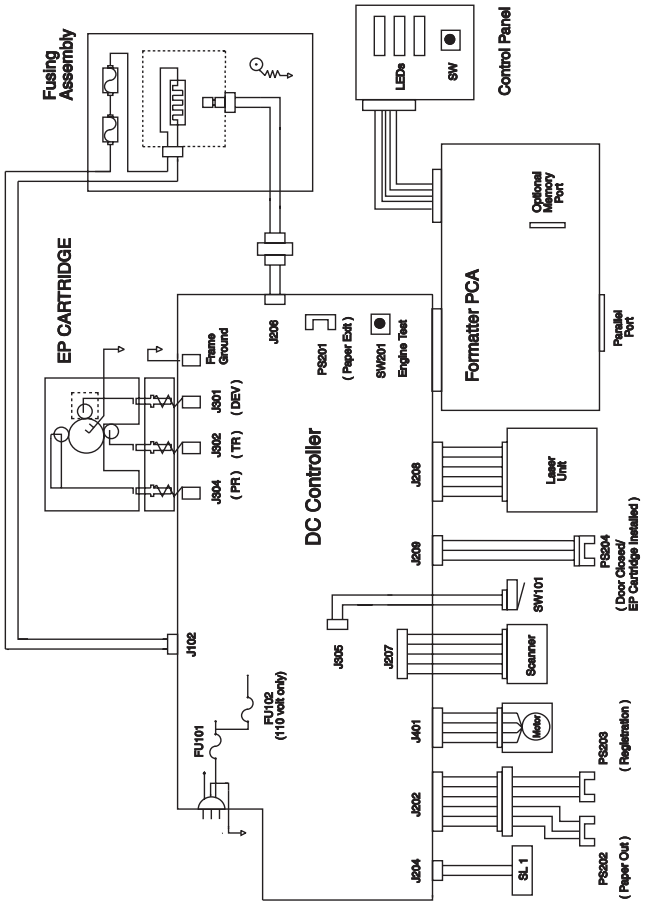


Figure 11-2 Wiring Diagram: HP LaserJet 5Si (1 of 5)

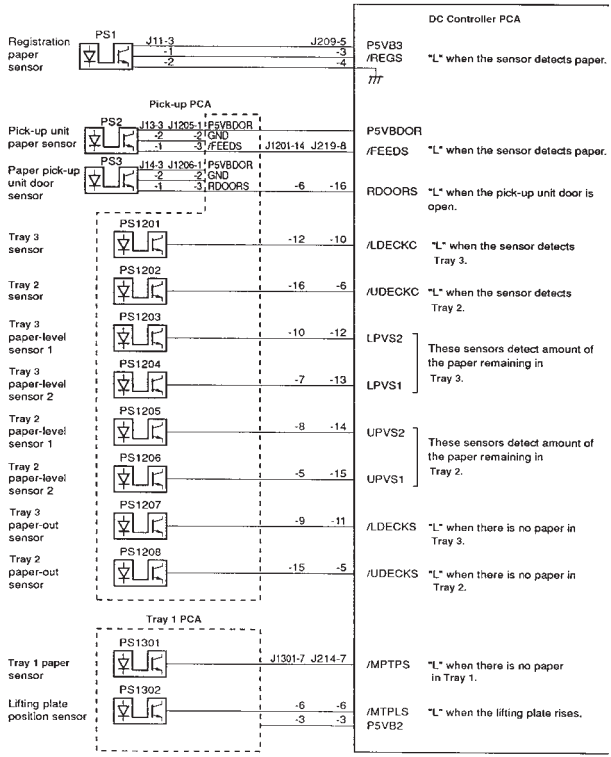


Figure 11-3 Wiring Diagram: HP LaserJet 5Si (2 of 5)

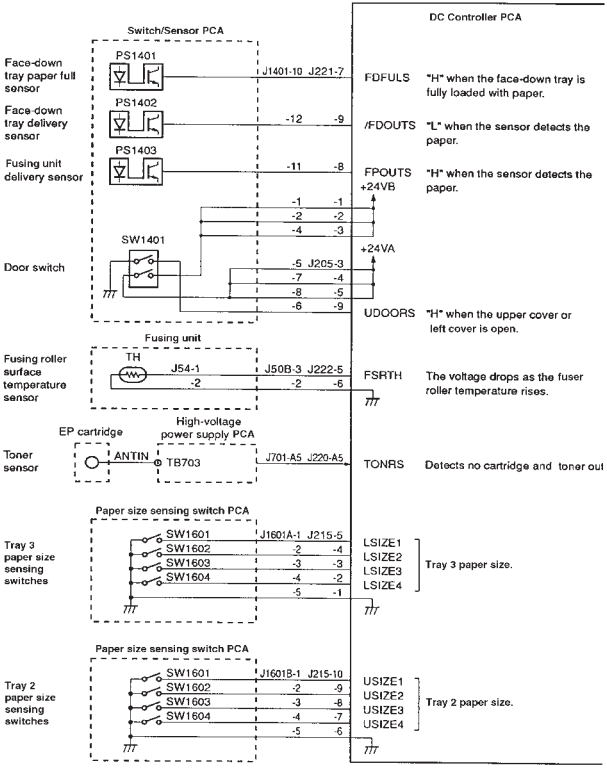


Figure 11-4 Wiring Diagram: HP LaserJet 5Si (3 of 5)

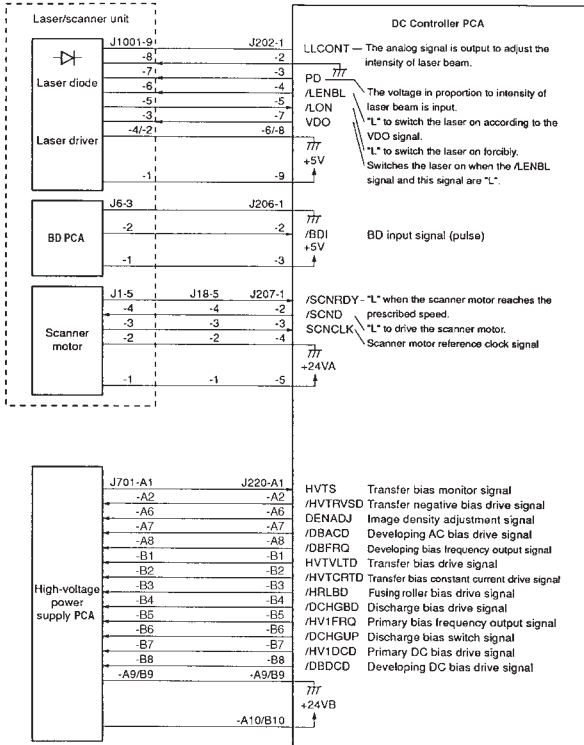


Figure 11-5 Wiring Diagram: HP LaserJet 5Si (4 of 5)

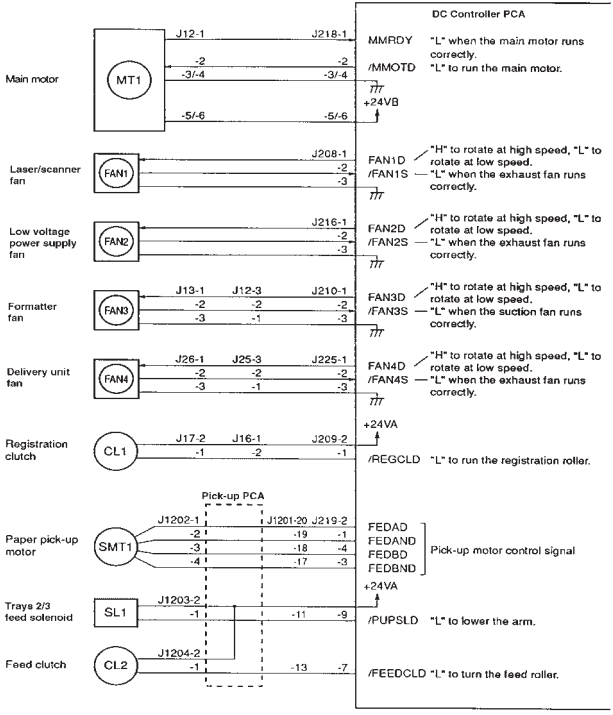


Figure 11-6 Wiring Diagram: HP LaserJet 5Si (5 of 5)

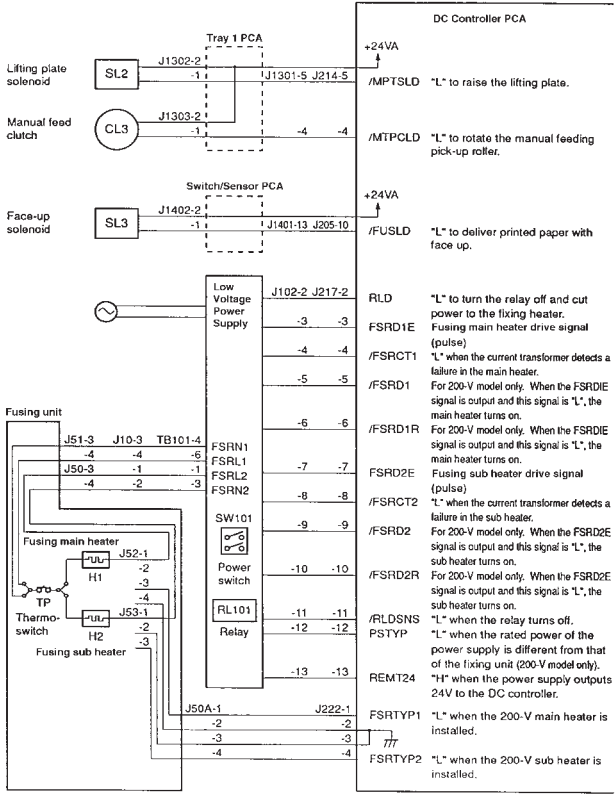


Figure 11-7 Main Wiring Diagram: HP LaserJet 5P

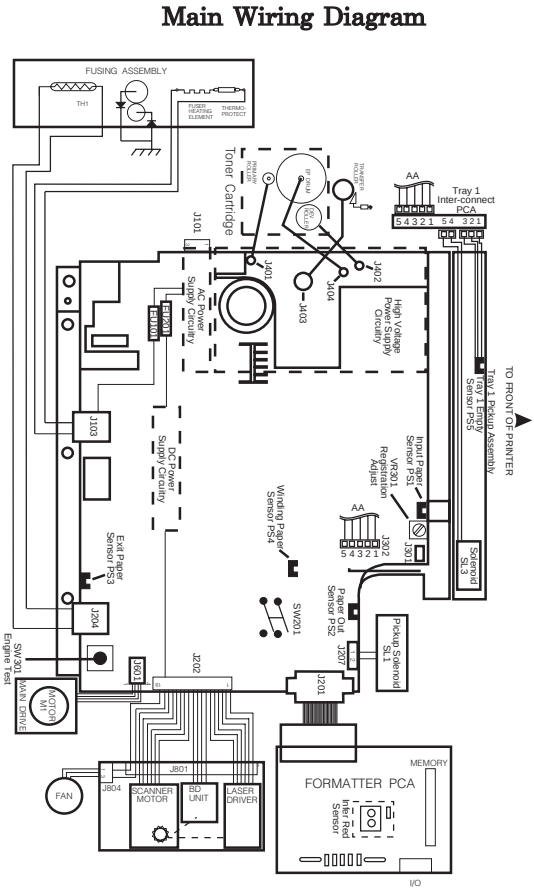


Figure 11-8 Main Wiring Diagram: HP LaserJet 5

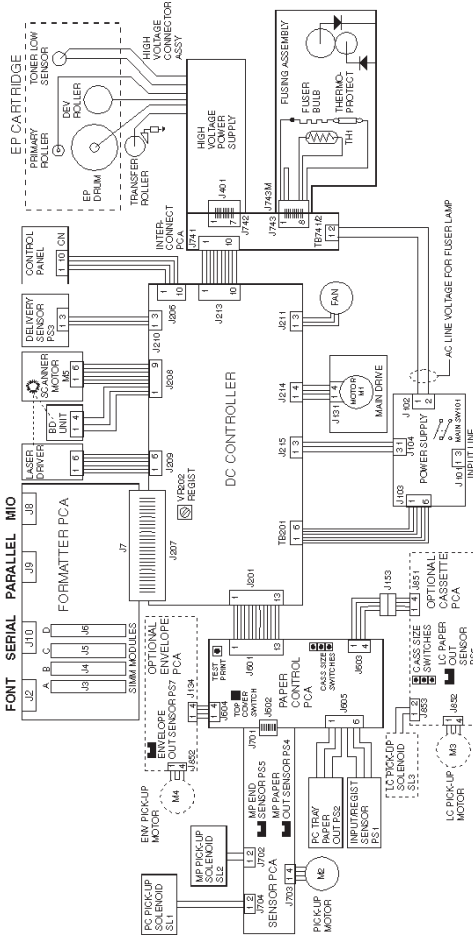


Figure 11-9 Main Wiring Diagram: HP LaserJet 4V (1 of 2)

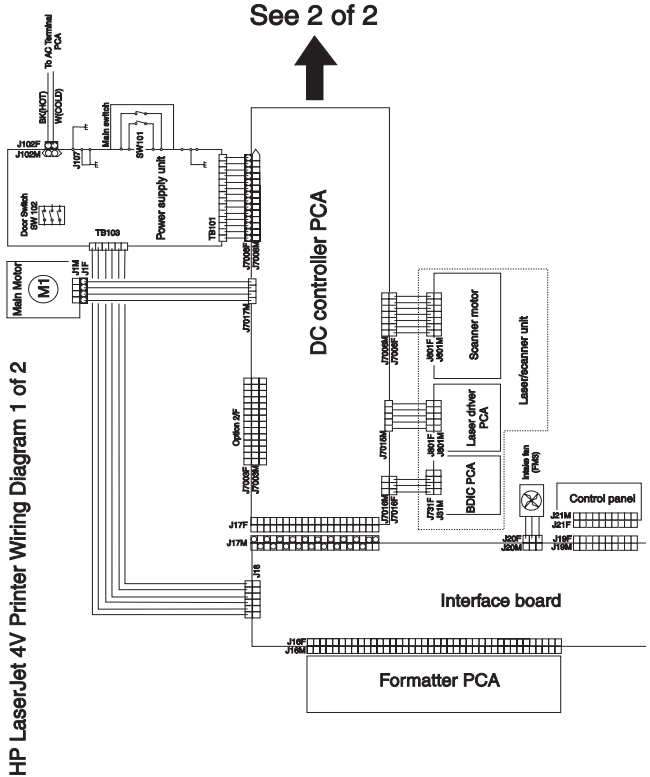


Figure 11-10 Main Wiring Diagram: HP LaserJet 4V (2 of 2)

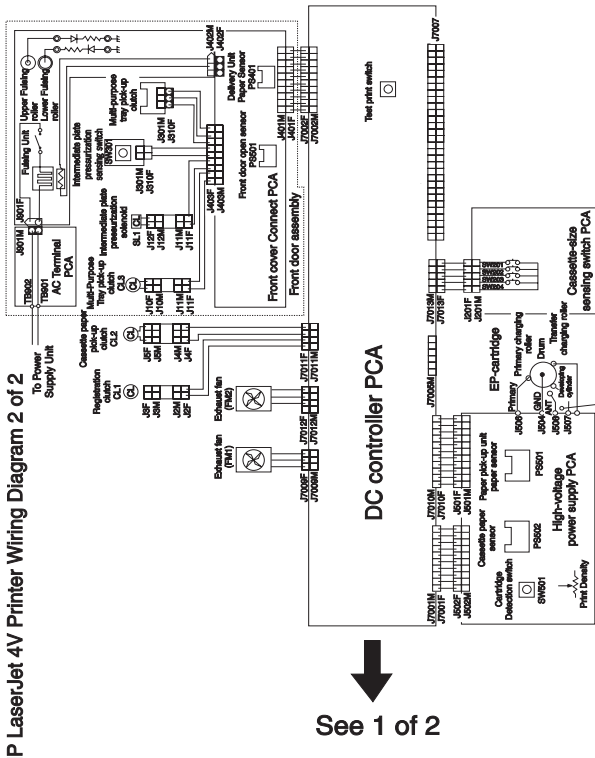


Figure 11-11 Main Wiring Diagram: HP LaserJet 4 Plus

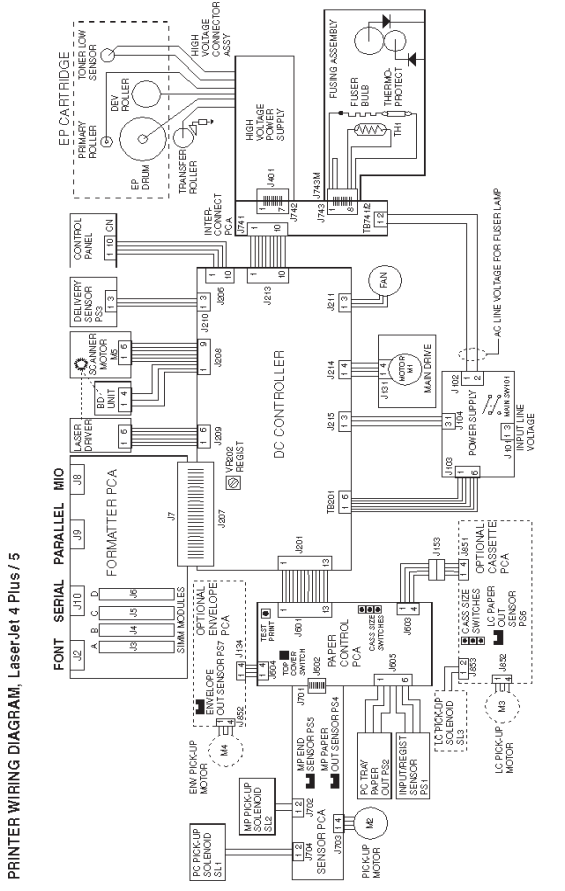


Figure 11-12 Main Wiring Diagram: HP LaserJet 4P/4MP, 4L/4ML

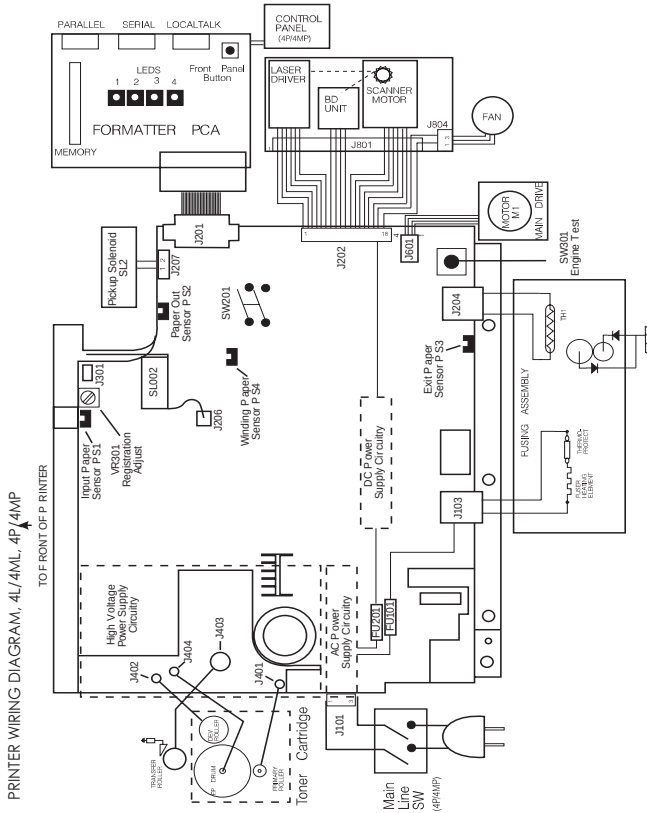


Figure 11-13 Main Wiring Diagram: HP LaserJet 4

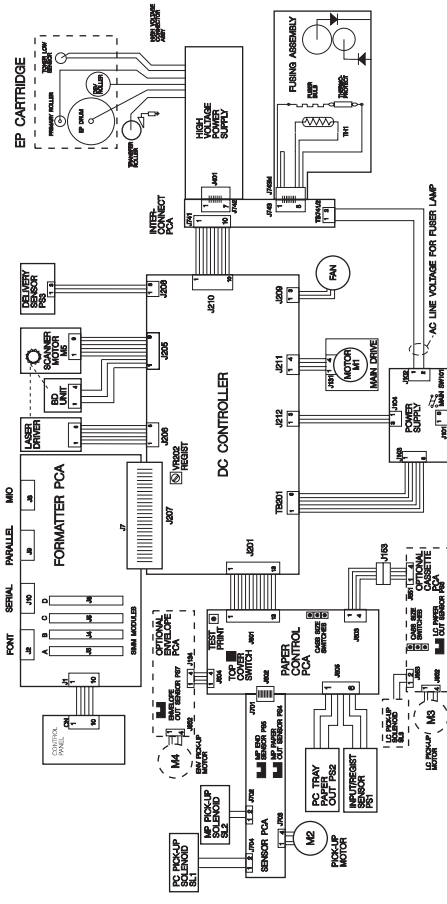


Figure 11-14 Main Wiring Diagram: HP LaserJet 4Si, IIISi (1 of 3)

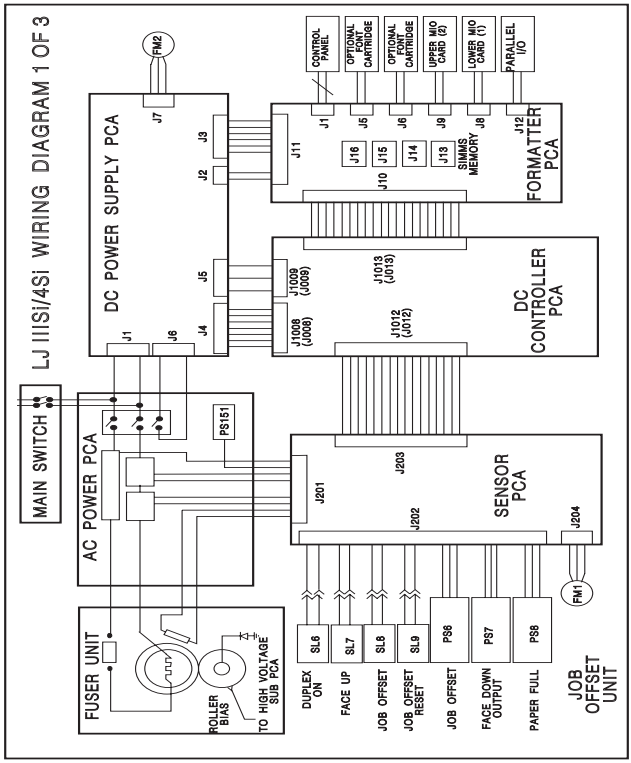


Figure 11-15 Main Wiring Diagram: HP LaserJet 4Si, IIISi (2 of 3)

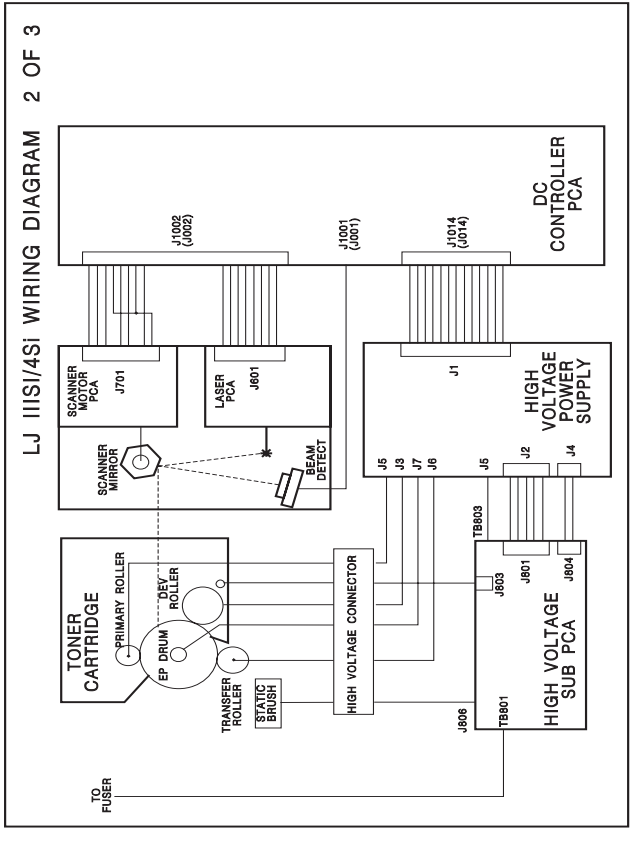


Figure 11-16 Main Wiring Diagram: HP LaserJet 4Si, IIISi (3 of 3)

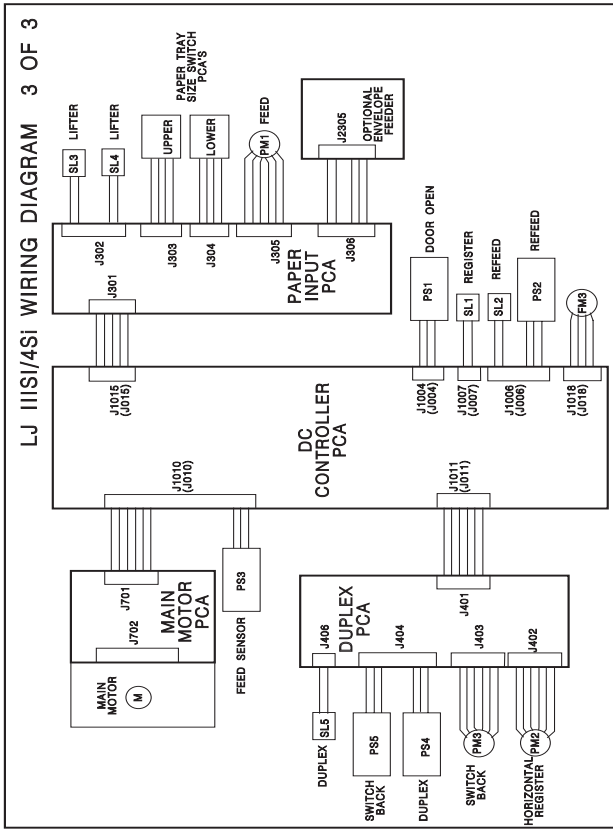


Figure 11-17 Main Wiring Diagram: HP LaserJet IIIP, IIP, IIP Plus

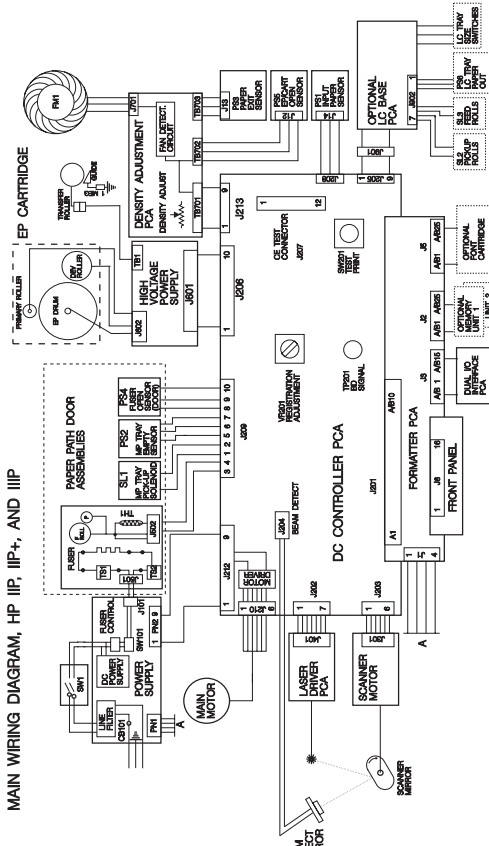


Figure 11-18 Main Wiring Diagram: HP LaserJet IIID, IID

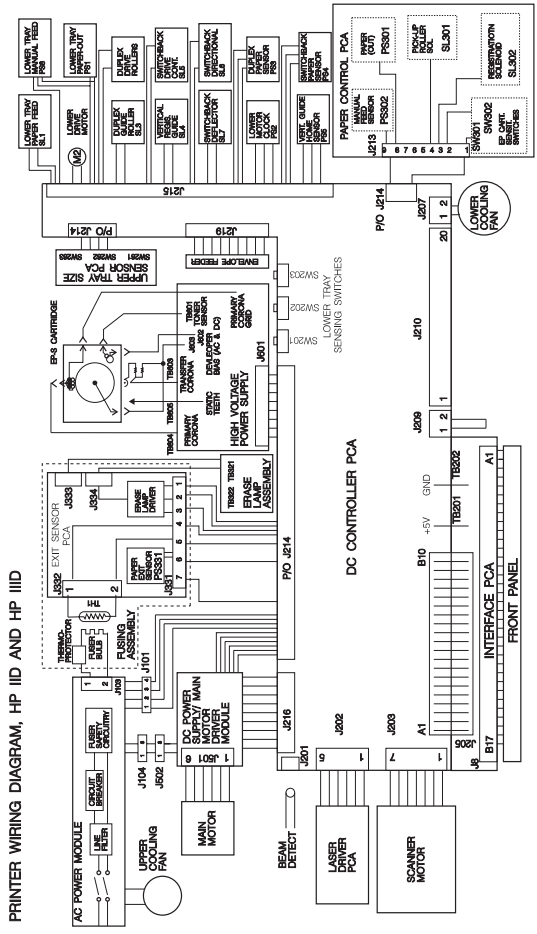

PRINTER WIRING DIAGRAM, HP IIID AND HP IID
AC POWER MODULE
LINE FILTER
CIRCUIT BREAKER
FUSER SAFETY CIRCUITRY
UPPER COOLING FAN
MAIN MOTOR
BEAM DETECT
LASER DRIVER PCA
SCANNER MOTOR
DC POWER SUPPLY/ MAIN MOTOR DRIVER MODULE
FUSING ASSEMBLY
THERMO PROTECTOR
FUSER BULB
EXIT SENSOR PCA
PAPER EXIT SENSOR
ERASE LAMP DRIVER
ERASE LAMP ASSEMBLY
HIGH VOLTAGE POWER SUPPLY
DC CONTROLLER PCA
INTERFACE PCA
FRONT PANEL
EP-S CARTRIDGE
PRIMARY CORONA GRID
TRANSFER CORONA
DEVELOPER BIAS (DC)
PRIMARY CORONA
VERTICAL TIMING
LOWER TRAY SENSING SWITCHES
ENVELOPE FEEDER
UPPER TRAY SIZE SENSOR PCA
LOWER COOLING FAN
PAPER CONTROL PCA
MANUAL FEED SENSOR
PAPER SIZE SWITCHES
PICKUP ROLLER SL301
REGISTRATION SOLENOID SL302
SWITCHBACK DIRECTIONAL SL5
SWITCHBACK DEFLECTOR SL7
SWITCHBACK PAPER SENSOR PS6
VERT. GUIDE HOME SENSOR PS9
DUPLEX ROLLER SL13
DUPLEX ROLLER PS13
VERTICAL REVERSE GUIDE SL4
LOWER PAPER FEED PS5
LOWER TRAY PAPER FEED SL1
LOWER TRAY MANUAL FEED PS8
LOWER TRAY LOW/OUT PS1
P/O J214
J215
J219
J214
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Figure 11-19 Main Wiring Diagram: HP LaserJet III, II

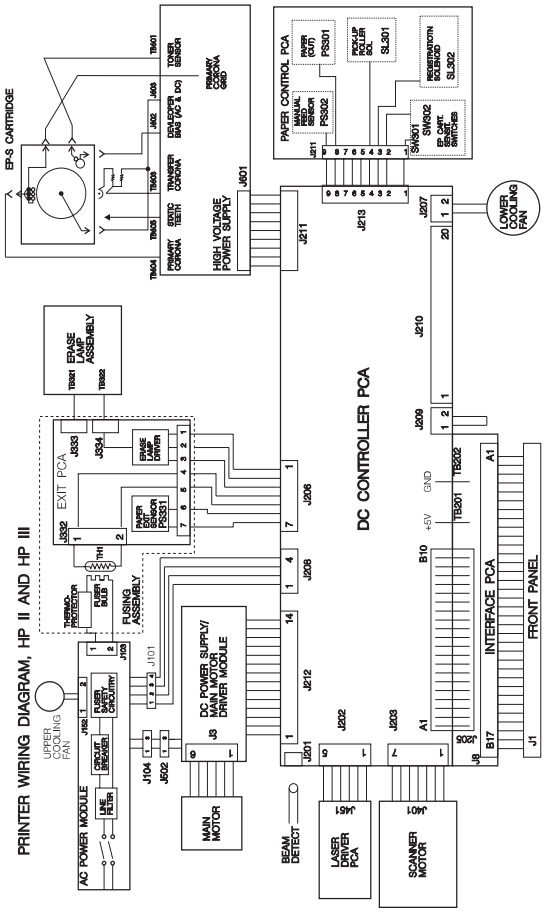
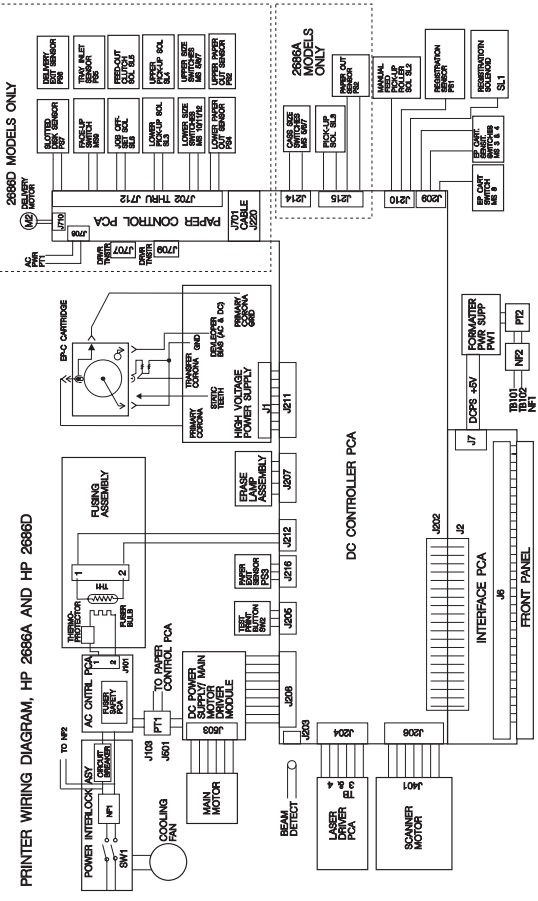


Figure 11-20 Main Wiring Diagram: HP 2686D, 2686A



12 Services, support, and training

Overview

This chapter provides information on obtaining training, support, and materials.

How to Get Training

Lecture/Lab Training (U.S. Only)

Service technicians who want individual, hands-on training can attend regularly scheduled lecture/lab training classes. These classes are offered throughout the country. To receive the latest schedule, call HP FIRST at (800) 333-1917, or see the HP website (www.hp.com/go/resellertraining) and request document ID number 9104. The latest schedule will immediately be sent to the fax number of your choice. Class schedule and registration information can also be obtained by calling the centralized registration center at (512) 434-1520.

Self-Paced Training Kits

Product	Description	Part Number
All LaserJet Printers	Basic Hardware Training Course (prerequisite for all LaserJet service training) Paper Specifications for LaserJet Printers	5961-0880 5961-0711 (NTSC) 5961-0712 (PAL)
LJ 5	Self-paced Training Kit NTSC Format PAL Format	 C3916A+49A-61 C3916A+49A-62
LJ 5P/6P	Self-paced Training Kit NTSC Format PAL Format	 C3980A+49A-60001 C3980A+49A-60002

Self-Paced Training Kits (continued)

Product	Description	Part Number
LJ 5L/6L	Self-paced Training Kit NTSC Format PAL Format	 C3990+49A-60001 C3990+49A-60002
LJ 5Si/5Si Mopier	Self-paced Training Kit NTSC Format PAL Format	 C4076-61101 C4076-61102
5P/6P	Self-paced Training Kit NTSC Format PAL Format	 C3980-61101 C3980-61102
LJII and III	Self-paced Training Kit	33449A + 49A-0
LJ IID and IIID	Self-paced Training Kit	33459A + 49A-0
LJ IIP, IIIP, and IIIP Plus	Self-paced Training Kit	33481A + 49A-00
LJ 4 and 4 Plus	Self-paced Training Kit NTSC Format PAL Format	 C3916-67903 C3916-67904
LJ 4L/4P	Self-paced Training Kit NTSC Format PAL Format	 C3980-61101 C3980-61102
LJ IIISi and 4Si	Self-paced Training Kit NTSC Format PAL Format	 C2009A + 49A-61 C2900A + 49A-62
LJ 4V	Self-paced Training Kit NTSC Format PAL Format	C314XA + 49A-61 C3141-67903 C3141-67901

Support Resources

North American Response Center (NARC)

The North American Response Center (NARC) provides technical support to service technicians. Reach the NARC at (800) 544-9976.

Other Areas

Outside of North America and Europe, contact your local HP sales office for assistance in obtaining technical support.

HP FIRST Fax System

HP FIRST (Fax Information Retrieval Support Technology) is a phone-in fax service that provides technical information to HP LaserJet users as well as to service personnel. Receiving a fax requires a group-3 facsimile machine or fax card. Service-related information includes the following:

- Service notes (HP Authorized dealers)
- Application notes
- Product Data Sheets
- Material Safety Data Sheets (MSDS)
- Typeface and accessory information
- Printer support software information
- Toner information
- Forms for requesting drivers and the Software Matrix

To retrieve Service Notes

(Authorized dealers, HP CEs ONLY):

1. Dial (1) (800) 333-1917 from any touch-tone phone.
2. Select (1) for HP FIRST.
3. Select (3) for a password customer.
4. Enter the password: 737842.
5. Follow the voice prompts to enter a document ID number or to select the index.
6. Follow the voice prompts to enter your fax number or the fax number of your customer.

Note

Delivery time depends on the length and complexity of the document.

HP FIRST, U.S.

Call the HP ASAP system at (800) 333-1917 and follow the voice prompts to enter HP FIRST.

HP FIRST, Europe

Call HP FIRST at one of the following numbers:

United Kingdom	(44) (134) 0800-960271
Netherlands	(31) (20) 0800-222420
Belgium (Dutch)	(32) (2) 0800-11906
Germany	(49) (13) 081-0061
Switzerland (German)	(41) (1) 0800-551527
Austria	(43) (1) 0660-8128

For English service outside the countries listed above, call (31) 20-681-5792.

HP End-User Support Options

Local Support Assistance

The user's first source of assistance should be the local dealer or service center. HP continuously provides local computer dealers and service centers with the latest information regarding products and services. To locate the nearest authorized dealer or service center, phone (800) 243-9816 (U.S.) or (800) 387-3867 (Canada).

24-Hour Support Information

Phone (800) 333-1917 to access the HP ASAP system for 24- hour automated support services. User support information includes notes for common software applications and troubleshooting tips. Users may request up to three documents per call.

Electronic Information Services

For 24-hour access to information via modem, we suggest:

- **CompuServe-** The CompuServe HP Peripherals forum (GO HPPER) provides printer drivers and interactive sharing of technical communication. To subscribe, call CompuServe, Inc. at (800) 524-3388. **Note**: CompuServe is not an official HP support channel, but the forum is maintained and supported by users.
- **Internet -** Printer drivers and product and support information can be obtained from the HP anonymous file transfer protocol (FTP) site 192.6.71.2 or ftp-boi.external.hp.com. The site is available to anyone with FTP access to the Internet. Access through the World Wide Web is available at URL http://www.hp.com/.

Printer Drivers by Mail

To obtain printer drivers, contact the software application manufacturer. HP distributes printer drivers for a few of the most popular applications. Call (970) 339-7009, 6 days a week, 24 hours a day (closed Sundays). Shipping and handling charges may apply on some printer drivers.

Telephone Assistance - In Warranty

Call (1) (208) 323-2551 Monday through Friday from 6 am to 10 pm, Saturday 9 am to 4 pm (Mountain Time) free of charge during the warranty period. However, your standard long-distance phone charges still apply. Have your system nearby and your serial number ready when calling.

Telephone Assistance - Post-Warranty

Post-warranty telephone assistance is available to answer your product usage questions. Call (1) (900) 555-1500 ($2.50 per minute, U.S. only) or call 1-800-999-1148 ($25 per call, Visa or MasterCard, U.S. and Canada) Monday through Friday from 7 am to 6 pm and Saturday from 9 am to 3 pm (Mountain Time). *Charges begin only when you connect with a support technician. *Prices subject to change.*

Hardware Repair Services

To find a local authorized repair center for hardware repair needs, call (800) 243-9816. HP also offers a variety of service contract options to complement the standard warranty. Call (800) 743-8308 (U.S.) or (800) 268-1221 (Canada).

13 Hewlett-Packard LaserJet Companion

Overview

This section provides information on the LaserJet 300 DPI page scanner, which is available in three models.

Hewlett-Packard LaserJet Companion

The HP LaserJet Companion includes the following models:

- C3989A Companion
- C3079A Companion SE
- C4106A Companion XI

(Except for minor differences in software, these are the same product.)

Description

The HP LaserJet Companion is a 300-DPI page scanner, parallel port pass-through accessory designed for Hewlett-Packard LaserJet 4, 5, and 6 series printers.

Warranty

The HP LaserJet Companion comes with a 1-year warranty, offering Central Repair only (no dealer repairs); Express Exchange (U.S. and Canada); and Repair and Return (Worldwide).

Supported Media

- The following media sizes are supported:

  Maximum: 216 mm x 762 mm (8.5 by 30 inches)
  Minimum: 51 mm x 89 mm (2 by 3.5 inches)

- The following media weights are supported:
  60 to 105 g/m^2 (16 lb to 28 lb)

Skew Specifications

Some skew is normal. The maximum amount of skew that is considered normal is 3.35 millimeters (0.13 inches) over 279 millimeters (11 inches). Skew exceeding the normal amount may be caused by media that is damaged, media that does not meet the specifications, or media that is loaded incorrectly.

If media meets specifications, is not damaged, and is correctly loaded, but skew remains excessive, clean the separation pad, pickup roller, and scan roller.

Cleaning

Clean these parts with isopropyl alcohol:

- separation pad
- pickup roller
- the white scan roller

Clean the image sensor with glass cleaner.

Cables

HP Part Number	Part Description
8120-6963	Cable shipped with the HP LaserJet Companion
C2950A	Printer parallel cable
C2951A	Printer parallel cable

Power Supply Modules

Output = 22 V DC, + or - 25%

HP Part Number	Part Description
9100-5534	120 Vac 60 Hz (U.S./CN/MX)
9100-5535	230 Vac 50 Hz (EUROPE)
9100-5536	240 Vac 50 Hz (U.K.)
9100-5537	220 Vac 50 Hz (ARG)
9100-5539	240 Vac 50 Hz (AUSTRL)
9100-5541	220 Vac 50 Hz (TI/INDO)
9100-5542	220 Vac 50 Hz (HNG KNG)

Appendix

Acronyms and Abbreviations

AC	Alternating current
AUTOCONT	Automatic continue
BNC	A 10-Base 2 connector used with coaxial cables
CFG	Configuration on control panel
DC	Direct current
DCPS	Direct current power supply
MS-DOS	Disk operating system
DPI	Dots per inch
DTR	Data terminal ready
DTR LINE	Data terminal ready line
EP	Electro-photographic
EPH	External paper handling
FRU	Field replacement unit
FTP	File transfer protocol
HP FIRST	Hewlett-Packard Fax information retrieval support technology
HP-GL/2	Hewlett-Packard graphics language
HTML	Hypertext markup language
HV	High voltage

HVPS	High-voltage power supply
I/O	Input/output
IR	Infrared
IrDA	Infrared Data Association
IRQ	Interrupt request
JEIDA	A type of memory module
JOBID	Print job identification
JP	Jobpack
LAN	Local area network
LED	Light-emitting diode
LVPS	Low-voltage power supply
LC PICKUP ROLLER	Lower-cassette pickup roller
MB	Megabyte
MEM	Memory
MIO	Modular input/output
MP PICKUP ROLLER	Multipurpose tray pickup roller
MP Tray	Multipurpose tray
MSDS	Material safety data sheets
NARC	North American Response Center
NTSC	National Television Standard Committee
NVRAM	Nonvolatile random-access memory
Ohm	A unit of measure of electrical resistance
PAL	Phase alternation line format
PCA	Printed-circuit assembly
PCB	Printed circuit board
PCL	Printer command language
PC PICKUP ROLLER	Paper-cassette pickup roller
PIU	Paper input unit

PJL	Printer job language
RAM	Random-access memory
RIP	Raster image process
ROM	Read-only memory
SIMM	Single inline memory module
SMO	Support materials organization
SMODE	Service mode
SPEC	Specifications
SRVR	Server
TCP/IP	Transmission control protocol/Internet protocol
TS l/T52	Thermoswitch
UNIX	Network operating system using TCP/IP protocol
URL	Universal resource locator
VDC	Volts direct current

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Service Websites

Electronic Support Center

Software, drivers, support documentation, frequently asked questions

http://www.hp.com/go/support

HP Technical Training (North America)

Classes and schedules

http://www.hp.com/go/resellertraining

Parts

Parts information

http://outfield.external.hp.com/spi/welcome.htm

Service Phone Numbers

All numbers listed are for North America only.

Dealer Response Line
Dealer pre/post sales and service support
(800) 544-9976 *U.S. Only* **(800) 363-6594** *Canada*

Customer Care Center
User questions, applications, LaserJet Fax
(208) 323-2551

HP First Fax – Information Retrieval System
Service notes, sales information, user help, software information
(208) 344-4809 **(800) 333-1917** *U.S. Only*

Customer Information Center
Sales dealer locations, literature, and specifications
(800) 752-0900 *U.S. Only*

HP Driver Distribution Center
Printer drivers and software application notes orders
(970) 339-7009 *U.S. Only*

Customer Support Sales Center
Authorized repair locations
(800) 243-9816 *U.S. Only*

Parts Direct Ordering / SMO
Service parts, supplies, and accessories orders
(800) 227-8164 *U.S. Only*

Parts Identification
Service part number identification
(916) 783-0804

North American Response Center
Online technical assistance
(800) 477-5526 *HP Only*

Corvallis Customer Service Center
Express exchange/customer return services
(916) 785-1200



May 1998 Edition

HP LaserJet Family Quick Reference Service Guide

Volume II

HP LaserJet Family Quick Reference Service Guide

Volume II

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Ordering other manuals

The HP LaserJet Quick Reference Service Guide, Volume II*,* provides support for newer monochrome printers (see the following page for a complete list of supported printers). It has been created to help the HP LaserJet service engineer quickly troubleshoot common printer problems.

For older monochrome printers, see the *HP LaserJet Quick Reference Service Guide,* Volume I. It provides support for the following printers: LJ 6L, LJ 5Si Mopier, LJ 5Si, LJ 5Si MX, LJ 5L, LJ 6P, LJ 6MP, LJ 5P, LJ 5MP, LJ 5, LJ 5M, LJ 5N, LJ 4V, LJ 4MV, LJ 4P, LJ 4MP, LJ 4L, LJ 4ML, LJ 4+, LJ 4M+, LJ4, LJ 4M, LJ 4Si, LJ 4Si MX, LJ IIISi, LJ IIIP, LJ IIP+, LJ IIP, LJ IIID, LJ III, LJ IID, LJ II, LJ 2686D, LJ 2686A.

While the quick reference guides are intended to provide all the information the service engineer will need for on-site repair of HP products, they are not intended to replace the service manual for any HP LaserJet product. For detailed information about the HP LaserJet products described in this guide, see the user guide or service manual for that product.

Service manuals for HP LaserJet products are available from Hewlett-Packard. The phone number for the Service Parts Order Desk is:

(800) 227-8164 (U.S. only)

If you are located outside of the U.S., contact your local HP Sales and Service office.

Supported products

Reference name used in this guide	Model number	Maximum pages per month	Service Manual part number
LJ 4000/4000T 4000N/4000TN	C4118A/C4119A/ C4120A/C4121A	65K	C4118-99024
LJ Companion	LJ C3989A/ C3979A/C4106A	N/A	HP Central Repair Only
LJ 5000/5000N/ 5000GN	C4110A/C4111A/ C4112A	65K	C4110-91033
LJ 3100	C3948A	6K	C3948-90958
LJ8000/8000N/ 8000DN	C4085A/C4086A/ C4087A	130K	C4085-91017
LJ Mopier 240	C4228A	130K	C4085-91017

Note

This guide will be updated on a regular basis as the service needs change, as new products are introduced, and as information becomes available.

1 Control panel messages

Overview

This chapter provides a list of printer control panel messages. Alphabetical messages are listed first, followed by numerical messages. Control panel messages that are self-explanatory are not included. If you need more detailed information, see the service manual for the printer.

Alphabetical messages

(number) is a group, group not allowed

- Enter a different one-touch key or an unassigned speed-dial code.

Access denied, menus locked

- Ask the network administrator to unlock the function.

Already in group

- While programming a group-dial code, a fax number has been added that is already in the group.
  - Add the next fax number to the group.

Bad duplexer connection

- Re-install the duplexer.
- If the message persists, make sure that the duplexer is connected and that the connector is not damaged.
- Replace the duplexer.

Bad opt tray connection

- Re-install the optional tray.
- Make sure that the optional tray is connected and that the connector is not damaged.
- Replace the optional tray.

Blacklisted (France only)

- The attempted fax number has received a voice answer or no answer, was busy on the first dial and redials, or was busy with redials pending.
  - Unplug the power cord for the fax machine from the power strip or outlet, and then plug it back in.

Busy

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

Cancel group edit, ENTER to confirm

- Back space was pressed while in a group-dial code in the Group Dial Setup level of the menu.

1. Press **Start** to return to the group-dial code and continue editing.
2. Press **Enter/Menu** to go to the Group Dial Setup level of the menu. (Press **Enter/Menu** again to choose a different group-dial code.)
3. Press **Stop/Clear** to exit the Menu settings.

Check finisher device alternates with Clear jam

- Check to see if paper is jammed in the external paper-handling finishing device.

Check finisher device alternates with Finisher align error

- Check to see if an alignment error has occurred in the external paper-handling finishing device.

Check input device alternates with Paper path open, please close it

- Check the doors and trays.
- Check the tabs and sensor levers in the tray for proper operation.
  - Replace any defective tabs or sensors.
- Replace the printed-circuit assembly (PCA) controller in the feeder.

Check output device alternates with Close output delivery path

- Make sure the paper path is closed between the printer and the external paper-handling output device.

Chosen language not available

1. Print the job using a driver for a different printer language, or add the requested language to the printer (if available).
2. Press **Go** to continue.

Clear document from scanner

- Check to see if the document is jammed or if multiple sheets of the document were loaded.
- Check the special media lever. It should be to the left for regular-weight items or to the right for thick items. Thick items must be fed one at a time.
- Check the control panel configuration for outgoing faxes, including the “send long pages” setting.

Close top cover

- Check SW101 for proper operation. Verify that the wires are connected.
- If necessary, replace SW101.
  - If the new switch does not solve the error, the wiring or the engine controller board may be defective.

Communication error

1. Try resending the fax.
2. If the call fails again, check that the telephone cord is securely connected. Then check for a dial tone on the phone line by pressing **Manual Dial**.
3. Wait; try resending the fax later.

Note

For additional details, see the *HP LaserJet 3100 Product Service Manual*.

Configuration err # (number 1-4)

- An error was detected in the static random-access memory (SRAM).
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. stuck addr

- In Service mode only, SRAM stuck address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. tied addr.

- In Service mode only, SRAM tied address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

[Date] [Time]

- The battery has failed. You can continue to use the HP LaserJet 3100 product without replacing the battery, but if you re-enter the Menu settings and then turn off the power, the settings are erased again.

Decoding error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Disk device failure

- Reseat the enhanced input/output (EIO) disk or replace the old disk device with a new disk.

Disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Disk file system is full

- Delete the files from the EIO disk and then try again, or add a Flash dual inline memory module (DIMM).
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Disk is write protected

- Use the HP JetAdmin software to disable the write protection.

Documents were lost, START to continue

1. Press **Start**. A report is printed.
2. Check the fax log status column for the “Fax Document was Lost” message.
3. Resend the associated outgoing faxes. Ask the sender to resend incoming faxes.

Duplex error, check duplexer

- Check the duplexer for a paper jam.
- Reseat the duplex assembly, and check the connection.
- Replace the Duplex unit.

EIO x disk initializing

- Stand by until the EIO disk is done initializing.

EIO x disk spinning up

- Stand by until the disk accessory card is done initializing.

EIO disk x non-functional

- Replace the EIO disk.

Encoding error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Envelope feeder load

1 Load the requested envelope type and size into the envelope feeder.

2 Make sure that the envelope size and type are set correctly on the Paper-Handling menu in the printer control panel.

3 Press **Go** if the envelope is already loaded in the feeder.

4 Press **-Value+** to scroll through the available types and sizes.

Errors likely in pages: (page range)

- Resend the fax or ask the sender to resend the fax to you.

Fax document was lost

- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes were lost. Then re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.

Fax memory error # (number 1-5)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes may have been lost. Then, re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.
- If the error persists, replace the formatter.

Flash device failure

- Remove the Flash DIMM and replace it with a new one.

Flash file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Flash file system is full

- Delete files from the Flash DIMM or add another DIMM.
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Flash is write protected

- Use the HP JetAdmin software to disable the write protection.

Group is empty, use ONE-TOUCH/SPEED DIAL

1 Begin adding fax numbers to the group-dial code by pressing the one-touch key for each number or by pressing **Speed Dial**.

2 Enter the speed-dial code for the fax number.

3 Press **Enter/Menu**.

Initializing

- Reseat the DIMM(s).

Input device condition xx.yy

1st x = Device number in chain.

2nd x = Device type (3 types):

1 = Input
2 = Output
3 = Stapler/stacker unit

yy = Device specific error.

- See the documentation that came with the paper-handling device.

Input limit reached

- The maximum number of fax numbers that can be added to an ad-hoc group is 100. Resend the fax, but only to 100 or fewer fax numbers.

Install front duplex cover

- Re-insert the duplexer's front cover.

Install tray x

- Re-insert the specified tray.
- Check for damaged tabs in the tray.
- Check for damaged switches in the printer.
- Replace the PCA controller in the feeder.

Invalid date or time

- Re-enter the date and time.

Keypad test failed

- Run the keypad test again.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the control panel.
  - Replace the formatter.

Loading program <number> alternates with Do not power off

- Wait for the program to load.

Long page? START to continue

- Press **Start** to continue scanning. If **Start** is not pressed within 3 seconds, the message disappears and the document scanner stops scanning because it thinks the page has jammed.
- If sending a fax or copying a document longer than 991 mm (39 in), the control panel configuration can also be set to “Send long pages.” This ensures that long pages feed without having to monitor the task. Press **Start** before the document scanner shuts off.

Manually feed [type] [size]

1. Load the requested paper into Tray 1.
2. Press **Go** if the appropriate paper is already loaded in Tray 1.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.

Memory full - send unscanned pages

- Reload the unscanned pages and re-send them to finish the fax job.
- Scan the unscanned pages to the computer and fax them from the computer.

Memory full - stored data lost

- Add more memory to the printer or simplify the print job.

Memory is full

- This message should clear automatically when the next task starts (for example, when you start a copy or receive a fax).

Memory settings changed

- Try changing the memory settings for I/O Buffering and Resource Saving (although default settings are usually best).
- Install additional memory in the printer.

Memory shortage job cleared

- Press **Go** to continue.
- On the printer control panel, change the setting for resource saving, or add more memory to the printer.

Memory shortage page simplified

- Press **Go** to continue.
- Add more memory to the printer.

Modem error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the LIU.
  - Replace the formatter.

No answer

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No dial tone

- Check that the telephone cord is securely connected.
- Check for a dial tone on the phone line by pressing **Manual Dial**.
- If necessary, check the wall outlet by plugging in a phone and attempting to place a call.

No fax in (number) tries

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No fax pages in memory to reprint

- Wait for a fax. As soon as a fax is in the memory, the fax will reprint.

No memory for report, erase/print document

- Print all faxes that have been received in memory.
- If you have several faxes set up to be sent at a future time or to be polled, use job status to clear them.

No modem installed

- There is a problem with the line interface unit (LIU).
  - Unplug the power cord from the power source, wait 10 seconds, and replug in the power cord.
- If the problem persists, replace the LIU.
- If the problem persists, replace the formatter.

No room in fax log

- The fax log was unable to print because of an error, such as out-of-paper.
  - Load paper in the paper input bin so the HP LaserJet 3100 product can print the log.

Not enough memory

- Try resending the job. If the error persists, try reducing the amount of activity on the HP LaserJet product. Cancel jobs in memory before resending the job.

Out of memory -- switching to ONE COPY

- The HP LaserJet product continues to copy, but only one copy is output.
  - Divide the copy job into smaller sections and then try copying again.
  - If you are collating the job, turn the collation feature off, make only one copy of the document at a time, or see the user guide for instructions about using the Document Assistant.

Output bin full alternates with Clear paper from [bin name]

1. Remove the media from the face-down tray.
2. Check PS1401 on the sensor PCA.
3. Make sure the sensor flag moves freely.

Paper bin is empty, please add paper

1 Load paper.

2 If paper is already loaded, remove it.

3 Check for, remove, and discard any jammed sheets.

4 Reload the paper.

Password must be 4 digits

- Re-enter a four-digit password.

Paused (memory full)

- Reduce activity on the HP LaserJet product, or wait for other jobs to finish so memory will be freed.
- If faxes are set up to be polled or sent at a future time, you may want to cancel these jobs to free memory.

Perform printer maintenance

Reset the maintenance page count only after a maintenance kit has been installed. Resetting the maintenance page count causes `PERFORM PRINTER MAINTENANCE` to appear after another 150,000 (LJ 5000 series), 200,000 (LJ 4000 series), or 350,000 (LJ 8000) pages have printed.

1 Hold down the **Item-** and **Value-** keys.

2 Turn the printer on.

3 Wait until `RESET MAINTENANCE COUNT` appears, and then release both keys.

PC print timed out

- Let the “print jobs retry” continue for 5 minutes. If the HP LaserJet 3100 product still does not print, resend the print job.

Phone number error

- The maximum number of characters that can be entered is 40. If you have a number longer than 40 characters, break the number into smaller chunks.

1 Enter the first part of the number, and press **Redial/Pause** as the last character in the first number.

2 Enter the second part of the number as if it were a second number going to a group. When the product dials, it will treat both numbers as if they are one.

Polling-in error

- Make sure that the sender's fax machine is ready to be polled, and check the fax number. Then set up to poll again.

Printer comm error^1

- Check that the parallel cable is securely connected between the HP LaserJet 3100 product and the computer.
- If the problem persists, unplug the power cord from the power source for 5 seconds, and then replug it.
- If the problems persists, replace the formatter.

Printer cover open or no cartridge

- Verify that the printer door is closed.
- Check the toner cartridge for proper installation.

Printer fixing error, replace fixing unit

- There is an error with the print engine.
- Check the cabling to the heating element.
- If the problem persists, replace the heating element.
- If the problem persists, replace the ECU.

Printer is busy

- No action is needed. If you already started another job, the job will be completed when the HP LaserJet product becomes available.

Printer laser error, call for service

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Printer motor error, call for service

- A problem has occurred with the print engine.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
  - If the problem persists, replace the motor.
  - If the problem persists, replace the ECU.

Printer paper jam, check paper path

- Check the input areas, the output areas, and the interior for the jam, and then clear the jam. The job should continue to print. If it does not, try reprinting the job.

Printer signal error

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Processing job from Tray x

- Check the tray selected and the type settings. If the printer does not respond after you press the control panel keys, turn the printer off, and then turn the printer on to clear the message.
- If paper is loaded when the printer is in Power Save mode, it might not be recognized. Open and close the affected source when the printer is in Ready mode.

RAM disk device failure

- Turn the printer off and on to clear the message.
- If the message persists, install a new RAM disk.

RAM disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

RAM disk file system is full

- Delete files and then try again, or turn the printer off and then turn the printer on to delete all files on the device. (Use HP JetAdmin software, HP FontSmart software, or another software utility to delete files.)
- If the message persists, increase the size of the RAM disk.
  - Change the RAM disk size from the Configuration menu in the printer control panel.

RAM disk is write protected

- Use HP JetAdmin software to disable the write protection.

Received error

- Ask the sender to resend the fax.

Redial failed

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on and working and to verify the fax number.

Remote fax was busy

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on is on and working and to verify the fax number.

Scan reference error

- Recalibrate the document scanner.
- If the problem persists, replace the CIS.

Scanner error #1

- An error has occurred within the SRAM.
- Press and hold down the **Stop/Clear** key for 7 seconds to reset the product.
- If the error persists, unplug the power cord from its power source for 10 seconds, and then replug it.
- If the error persists, replace the CIS.
- If the error persists, replace the formatter.

Scanner isn’t available

- The document scanner mechanism is in use.
  - Wait until the document scanner has finished the current job before sending the next job.

Scanner jam - reload

- Pull open the document release door and then remove the jammed document.

Speed dial (number) is not assigned

- Choose a speed-dial code that has already been assigned a fax number.

System error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the message is still displayed, replace the formatter.

There are no documents in memory

- No action is required. There are no faxes to retrieve.

Tray x empty

- Load the empty tray (X) to clear the message.
- Inspect the tray for damaged tabs.
- Check the sensor-arm flags for damage. Be sure the flags can move freely.
- Replace any defective sensors.

Tray x lifting

- Verify that the media can be pulled from another tray.
- Replace the paper input unit.

Tray x load

1. Load the requested paper into the specified tray (X). Ensure that the trays are correctly adjusted for size.
2. Press **Go** to print from the next available tray.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.
5. Inspect the switches in the tray.
6. Remove the tray, and then turn the printer on. Push the switches by hand to see if the switches register.

Unrecognized format

- When printing, the incorrect printer driver was selected or an error occurred on the parallel interface.

1 After selecting the Print command in the software application you are using, select the HP LaserJet 3100 as the printer.

2 Reprint the job.

Unsuccessful call

- Check the fax number and try resending the fax.
- If the message appears again, try sending to another fax machine or try again later.

Unsupported size in tray [yy]

- Load a supported paper size in the tray.

Use [type] [size] instead?

1 Press **-Value+** to scroll through the available types and sizes.

2 Press **Select** to accept the alternate type or size.

Numerical messages

XX.YY printer error, press GO to continue

Press **Go** on the printer control panel to clear the error message.

13 Paper jam

- Remove the jammed paper from the specified location. Check the entire paper path for other pieces of paper.
- Open and close the top cover to clear the message.
- Check sensors and flags in the paper path for proper operation.

13.1 Paper delay jam at paper feed area
13.2 Paper stopped jam at paper feed area

- Ensure that the paper trays are loaded properly so that paper can feed from the trays.
- Check the input area for obstructions such as paper in the paper path or damage to the registration assembly.
- Verify that the transfer roller is positioned correctly.
- Check PS 102 and PS 103 (4000 series) and PS 402 and PS 403 (5000 series) for proper operation.
  - Replace any defective sensors or flags.

13.5 Paper delay jam at fuser
13.6 Paper stopped jam at fuser

- Check the transfer roller and small media belt to ensure that the roller and belt are operating and can feed the paper.
- Check the paper path for obstructions at the transfer roller, toner cartridge, paper feed guide, and fuser.
- Check PS 501 and PS 106 (4000 series), PS 1307 (5000 series), or PS 1403 (8000 series) for proper operation. Replace any defective sensors or flags.

13.9 Check left door

- Inspect the path between the fuser and delivery assemblies.
- Check the diverter assembly.

13.10 Paper delay jam at paper reversing area/ duplexer

- Check the duplexer and the rear area of the printer for obstructions or damage.
- In the duplexer, check PS 701 and PS 703 for proper operation.
- Replace the duplexer if a sensor is defective.

13.11 Paper jam

- Check the entire paper path.
- Reseat the duplexer.
- Try the Paper Path Test.
- Replace the duplexer.

13.11 Paper jam in input device

1 Open the vertical transfer unit (VTU) and remove the media.

2 Verify that the entry or exit sensor can move freely.

3 If the problem persists, open the VTU and override its Open Door sensor, perform a Paper Path test from the 2,000-sheet Input Tray (or 2x500-sheet Input Tray), and make sure the feed rollers are advancing the paper.

- If the rollers do not rotate, verify the connections at the main drive assembly, pickup assembly, controller PCA, and power supply. If the rollers still do not rotate or do not drop down, replace the pickup assembly.
- If the rollers rotate and drop down without advancing the paper, replace the feed rollers using the maintenance kit.
- If the problem persists, replace the VTU.

13.12 Paper jam

- Check the paper path between the fuser and duplex assembly.
- Reseat the duplexer.
- Replace the duplexer.

13.13 Paper jam

- Check the entire paper path.
- Remove the duplex assembly and look for paper in the side of the assembly.
  - Retest.
- Replace the duplexer.

13.20 Paper jam

- Check the paper path for obstructions.
- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.21 Door open jam

- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.22 Paper jam in output device

- Open the flipper jam access door and remove the media.
- Make sure the sensor flag moves freely.
- Make sure that the flipper shaft is in place.
- If the problem persists, replace the flipper assembly.
- If the problem persists, replace the mailbox controller PCA.

20 Insufficient memory alternates with Press GO to continue

- Press **Go** to print the transferred data (some data might be lost); then simplify the print job or install additional memory.

21 Page too complex

- Press **Go** to print the transferred data. (Some data could be lost).
- To print the job without losing data, select Page Protect=on from the Configuration menu in the printer control panel and then print the job. Afterward, return to Page Protect=auto. Do not leave Page Protect=on; doing so could degrade performance.
- If this message appears often, simplify the print job or install additional memory.

22 EIO x buffer overflow alternates with Press GO to continue (too much data sent to EIO card)

- Press **Go** to clear the message. (Data will be lost.)

22 Parallel I/O buffer overflow (too much data sent to parallel port)

- Check for a loose cable connection. Use a high-quality IEEE-1284 cable.
- Press **Go** to clear the error message. (Data will be lost.)

22 Serial I/O buffer overflow alternates with Press GO to continue (too much data sent to the serial port)

- Verify that the correct option for serial pacing is selected on the I/O menu.
- Print a Menu Map and verify that the serial pacing item (from the I/O Menu on the printer control panel) matches the setting on the computer.
- Press **Go** to clear the error message. (Data will be lost.)

40 Bad serial transmission (data transfer error)

- Verify cable connections.
- Verify that the printer serial configuration is set the same as the computer.
  - Access the serial baud rate setting from the I/O Menu on the printer control panel.
- Press **Go** to clear the error message and continue printing.

40 EIO x bad transmission (connection between printer and EIO card broken)

x = Description

1 = EIO slot 1

2 = EIO slot 2

- Turn the printer off and reseat the card.
- Press **Go** to clear the error message and continue printing.

41.3 Unexpected paper size

- Verify that all trays are adjusted correctly for size. (The printer attempts to print the job until size settings are correct.)
- If you are trying to print from Tray 1, make sure that the paper-size setting in the printer control panel is configured correctly.
- If you are trying to print from the optional 500-sheet tray, be sure to set the paper-size dial to match the paper size loaded in the tray.
- Press **Go**. The page containing the error is automatically reprinted. (Or, press **Cancel Job** to clear the job from the printer's memory.)

41.x Printer error alternates with Press GO to continue

- A temporary printing error occurred.

  x = Description

  1 = Unknown misprint error

  2 = Beam detect error

  4 = No VSYNC error

  5 = Media feed error

  9 = Noise VSREQ error

- Press **Go**. The page containing the error reprints automatically. If the error persists, try the following procedures:
  - Reseat the connections to the laser scanner and the engine controller board.
  - Replace the laser scanner.
  - Replace the engine controller board.

50.x Fuser error

x = Description

1 = Low fuser temperature

2 = Fuser warm-up service

3 = High fuser temperature

4 = Faulty fuser

5 = Inconsistent fuser

1 Turn the printer off, wait 20 minutes, and then turn the printer on.

2 If the message persists, reseat the fuser.

3 If the message persists, replace the fuser.

51.x Printer error (loss of beam detect)

x = Description

1 = Beam detect error

2 = Laser error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

52.x Printer error (the laser scanner speed is incorrect)

x = Description

1 = Scanner startup error

2 = Scanner rotation error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

53.xy.zz Printer memory error with an accessory

The DIMM that caused the error will not be used.

x = DIMM type

0 = read only memory (ROM)

1 = random access memory (RAM)

y = Device location

0 = Internal memory (ROM or RAM)

1 to 3 = DIMM slots 1, 2, or 3

zz = Error number

0 = Unsupported memory

1 = Unrecognized memory

2 = Unsupported memory size

3 = Failed RAM test

4 = Exceeded maximum RAM size

5 = Exceeded maximum ROM size

6 = Invalid DIMM speed

7 = DIMM reporting information incorrectly

8 = DIMM RAM parity error

9 = ROM needs to be mapped to an unsupported address

10 = DIMM address conflict

11 = PDC XROM out of bounds

12 = Unable to make a temporary mapping

- Turn the printer off, and reseat or replace the specified DIMM.
- Try the DIMM in another slot.
- Replace the DIMM that caused the error.

55 Printer error alternates with Press GO to continue (internal communications problem)

- Press **Go**. The page containing the error reprints automatically.
- Check the power at the site.
- Replace the formatter PCA.
- Replace the DC controller.
- Replace the engine controller board.

56.x Printer error alternates with Cycle Power to continue

x = Description

1 = Illegal input

2 = Illegal output

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and on.
- Check the printer's configuration.

57.x Printer Error

x = Description

4 = Printer fan

7 = Duplex fan

- Check the fan's connector and verify that the fan is not blocked.
- Replace the fan.

59.x Printer error

x = Description

0 = Motor error

1 = Motor startup error

2 = Motor rotation error

- Turn the printer off and then on.
- Make sure that the fuser or toner cartridge is not hindering gear movement in the drive train.
- Verify that the cable in the main motor is seated properly.
- If the error persists, replace the motor.

62.x Printer error (printer memory)

x = Location of problem

0 = Internal memory

1 to 3 = DIMM slots 1, 2, or 3

- Reseat or replace the specified DIMM.

64.x Printer error (scan buffer)

- Turn the printer off and then on.
- If the message persists, replace the formatter.

66 Error (external paper-handling device)

First x = Device number in chain

Second x = Device type (3 types):

1 = Input

2 = Output

3 = Stapler/stacker unit

yy = Device-specific error

- Press **Go** to clear the message.
- Turn the printer off and then on.
- Check all of the cables.
- Reseat the external paper-handling device.

66.11 Input device failure

- Verify that the lifting plate lifts up freely by hand.
- Verify that the paper size plates are installed correctly and are not bent.
- Check the pickup roller for proper installation.
- Check the pickup assembly and replace if necessary.
- Replace Tray 4.

66.xx.yy Input device failure alternates with Check cables and cycle power

- Check for an error in an external paper-handling device.

  1st x = Device number in chain

  2nd x = Device type (3 types):

  1 = Input

  2 = Output

  3 = Stapler/stacker unit

  yy = Device specific error
- Press **Go** to clear the message.
- Turn the printer off, and then turn the printer on.
- Reseat the external paper-handling device.

68 NVRAM full check settings

- Print a configuration page and check the printer settings to determine which values have changed.
- Hold down **Cancel Job** while turning the printer on.

69.x Printer error

x = Description

0 = The duplex mechanism has failed.

1 = The duplex side adjust has failed.

- Turn the printer off, and then turn the printer on.
- Reseat the duplexer.

79.xxxx Error (printing)

The printer detected an error. The numbers (xxxx) indicate the specific type of error.

- Turn the printer off and then on.
- Try printing a job from a different software application. If the job prints, go back to the first application and try printing a different file. (If the message appears only with a certain software application or print job, the customer should contact the software vendor for assistance.)

If the message persists, try the following procedures:

- Turn the printer off and then on.
- Reseat or replace the interface cable and power cycle the printer.
- Remove the DIMMs one at a time and power cycle the printer.
- If possible, use the parallel interface.
- With the EIO cards removed from the printer, perform a cold reset.
- If the error persists, replace the formatter.

8x.yyyy critical error (EIO accessory)

- The EIO accessory in slot x has encountered a critical error as specified by yyyy.

  x = Description

  1 = EIO slot 1 -The printer detected an error with the EIO card.

  2 = EIO slot 2 -The printer detected an error with the EIO card.

  6 = EIO slot 1 -The EIO card detected an error.
  The EIO card may be defective.

  7 = EIO slot 2 -The EIO card detected an error.
  The EIO card may be defective.

- Turn the printer off, and then turn the printer on.
- Reseat or replace the EIO board.

2 Service mode

Overview

Service mode allows service personnel to verify and manipulate internal printer settings and to access the diagnostic feature. Service mode should be used only by authorized service personnel.

Service mode tasks

You can perform the following tasks while in Service mode.

- Verify the page count.
- Set the page count.
- Set the maintenance count.
- Verify and set the serial number.
- Set the cold reset default. This sets the factory default paper size to either Letter or A4.
- Turn the diagnostic function on or off (for software developer's use only).
- Clear the event log.
- Use the extended Service mode.
- Reset softswitches.
- Perform a firmware download.
- Recalibrate the document scanner.
- Set the interval at which the `PERFORM PRINTER MAINTENANCE` message appears on the control panel.

Accessing Service mode

4000, 5000, and 8000 series only

Use the following procedure to access Service mode.

1. Turn the printer off.
2. Press **Select** and **Cancel Job** simultaneously while turning the printer on. Hold the keys down until all lights are illuminated. (If the control panel reads INITIALIZING, the keys were released too soon.)
3. Press the right side of the **Menu** key, and then press **Select**. SERVICE MODE appears.
4. To exit Service mode, press **Go**.

Accessing Service mode

3100 only

Use the following procedure to access Service mode.

1. Press **Backspace#**** to access the extended service menu.
2. Use the **<** and **>** keys to select the choices given in the extended service menu (see the Extended service menu tree, page 52) and press **Enter/Menu**.

See the display for further instructions. Notes about some of the menu choices are provided in the Extended service menu tree on page 52.

Setting the page count

4000, 5000, and 8000 series only

The page count is stored in the printer's non-volatile memory. If it is necessary to replace the formatter PCA, the page count should be set to the current value to reflect the age of the print engine. Use the following procedure to set the page count.

1 Before replacing the formatter PCA, print a Configuration Page to verify the current page count and serial number of the printer, if possible. Use the information on the Configuration Page to reset the page count and serial number for the new formatter PCA.

Note

Press the right side of the **Menu** and **Item** buttons to increase the value (+). Press the left side of the **Menu** and **Item** buttons to decrease the value (-).

2 Press **Menu+** to display SERVICE MENU.

3 Press **Item+** to advance to the PAGES=XXXXXX display. XXXXXX represents the page count currently stored in the non-volatile memory. The underlined character denotes the position of the cursor.

4 Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor will move to the first digit when you press the **Select** key.

5 Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit changes the value of the digit to 0).

6 Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.

7 Press **Go** to exit the Service Menu.

Setting the maintenance count

4000 and 5000 series only

The maintenance count should be reset only after a maintenance kit has been installed. Resetting the maintenance count resets the maintenance counter so that the message PERFORM PRINTER MAINTENANCE displays after another 150,000 (5000 series), 200,000 (4000 series), or 350,000 (8000 series) pages are printed.

Note

MAINTENANCE COUNT in the Service mode Menu sets the page count interval for when the next printer service is due for the printer. The maintenance count is set initially at the factory. Editing this number is similar to editing the PAGES item.

1. Hold down the **Item-** and **Value-** keys.
2. Turn the printer on.
3. Wait until RESET MAINTENANCE COUNT displays and then release both keys.

Setting the serial number

4000 and 5000 series only

Re-enter the serial number whenever you replace a formatter.

1. Press **Menu** to display the SERVICE MENU.
2. Press **Item+** three times. SERIAL NUMBER=XXXXXX displays. XXXXXX represents the page count currently stored in the printer's non-volatile memory. The underlined character denotes the position of the cursor.
3. Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor wraps around the first digit when you press the **Select** key.
4. Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit will change the value of the digit to 0).
5. Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.
6. Press **Go** to exit the Service Menu.

Setting the page count, maintenance count, and serial number

8000 series only

The page count, maintenance count, and printer serial numbers are stored in non-volatile memory. PAGECOUNT is the total number of images printed by the printer; MAINTCOUNT is the page count when the next preventive maintenance should be performed (every 350,000 images); and S.N. is the printer serial number (also located on the printer back cover).

If it is necessary to replace the formatter PCA, these numbers should be set to the current values to accurately reflect the age of the print engine. The printer service manual provides the procedure for setting these values.

Before removing the old formatter PCA, print a configuration page to verify the current values, if possible.

Note

If it is not possible to print a configuration page, try to verify the values before replacing the formatter PCA by following steps 1 through 5, below.

After verifying the page count, maintenance count, and printer serial number from the old formatter PCA, replace it with the new PCA.

1. Enter Service mode. See “Service mode” in the printer service manual for instructions.
2. When SERVICE MODE is displayed, press **Menu** to access the Service Menu.
3. Press **Items** to display Pages = Maintenance count = Maintenance Interval = Serial Number =.
4. Enter the appropriate values for each item.
5. Press **Go** to exit Service mode.

Setting the default paper size used in a cold reset

4000, 5000, and 8000 series only

Cold reset clears all data from the printer memory and sets all defaults back to the factory setting.

The default paper size is stored in NVRAM. Whenever the printer is cold reset, the default paper size is restored. The default paper size is set to the factory setting. Possible values are `COLD RESET PAPER=LETTER` and `COLD RESET PAPER=A4`. When replacing the formatter in countries that use the A4 paper size (in place of the letter- size paper), set the cold reset paper size to A4.

To customize the cold reset paper size:

1. Enter the Service mode. See “Service Mode in the printer service manual for instructions.
2. Press **Menu** to display `SERVICE MENU`.
3. Press **Item+** until `COLD RESET PAPER=LETTER* or A4` displays.
4. Press **Item+** to toggle between `LETTER` and `A4`.
5. Press **Select** to activate your choice.
6. Press **Go** to exit the Service Menu.

Diagnostics

4000, 5000, and 8000 series only

The diagnostics menu item enables or disables the use of the firmware diagnostic features. These features are accessible when DIAGNOSTICS=ON displays. To access the diagnostic features, verify that the printer is in the READY state and press **Select**.

Note

This procedure is for software developers only.

Clear event log

Select this item to clear the internal event log.

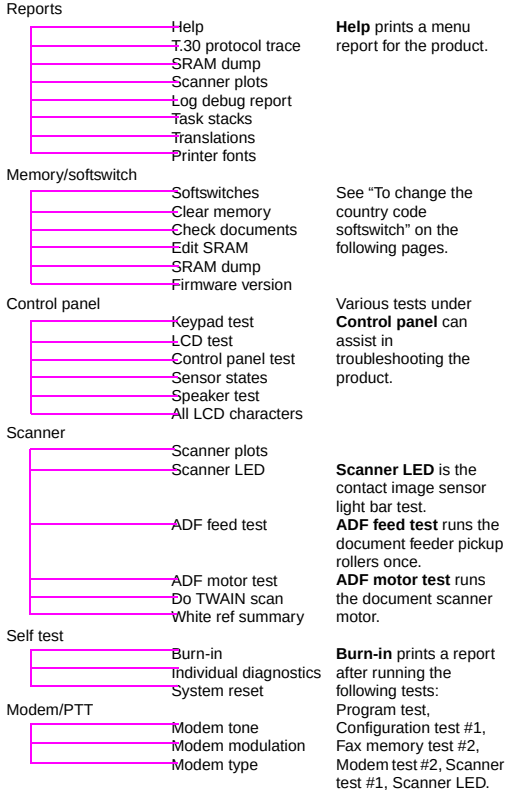
Extended service menu

3100 only

Use the extended service menu to run various self-tests and to change softswitch settings, such as the country code softswitch setting.

The following page shows the layout of the extended service menu settings in a hierarchical diagram.

Extended service menu tree



Self-test in extended service mode

3100 only

If you perform a self-test from the extended Service Menu, the printed report will also show the firmware revision number and details.

Note

Print the internal reports before performing extended service mode tests. The reports contain a record of all settings and can assist you in restoring the product to its settings.

The table below lists the tests that are performed during a self-test and the actions to take when tests fail.

Extended service mode self-test failures

Test	If the test fails, take these actions:
Configuration test #1	Replace the formatter.
Fax memory test #1	
Program test #1	**1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree, page 52). **3** If the test fails again, replace the formatter.
Configuration test #2	
Configuration test #3	
Configuration test #4	
Fax memory test #2	
Fax memory test #3	
Fax memory test #4	
Fax memory test #5	
Modem 1 test #1	
Modem 1 test #2	
Modem 1 test #3	

Extended service mode self-test failures

Test	If the test fails, take these actions:
Modem 1 dial tone detect	**1** Make sure that the telephone cable is plugged into the correct connector on the product and that the telephone line is operational (use a telephone to test the line). **2** If the test fails again, check the configuration settings in the control panel. **3** If the test fails again, replace the LIU.
Scanner test #1	This test fails under normal conditions if the document scanner is busy. If the document scanner is not busy: **1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging in the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree). **3** If the test fails again, replace the formatter.

Other tests in extended service mode

3100 only

The following charts shows tests that can be performed in extended service mode and provides a brief explanation of each test:

Extended service mode tests

Test	Explanation
Keypad test	Tests that all keys are functioning (by pressing the keys in sequence)
LCD test	Tests the control panel display
Control panel test	Tests the control panel lights
Sensor states	Shows current detector activation levels. Detector 1 and detector 2 are paper-size detectors. The control panel display shows the percentage of time each detector is activated
All LCD characters	Scrolls through the full list of control panel display characters
Scanner plots	Tests and recalibrates the document scanner
Scanner LED	After selecting this menu item, lift the document release door and verify that all of the LEDs in the contact image sensor are lit.
ADF feed test	Runs the document scanner pickup rollers once
ADF motor test	Runs the document scanner motor
Individual diagnostics	Run individual tests from the self-test sequence (see the extended service mode self-test failures table).
Modem tone	Generates tones with various frequencies from 300 Hz to 2425 Hz
Modem modulation	Generates various fax identification signals

Reports in extended service mode

3100 only

The following chart shows reports that can be printed from extended service mode and provides a brief explanation of each report.

Extended service mode reports

Report	Explanation
T.30 protocol trace	Prints a report of the G3 protocol transmissions and receptions
SRAM dump	Prints SRAM address values in an address range you select
Scanner plots	Prints the calibration page
Log debug report	Prints detailed fax and memory address information. Fax information includes job number, start time used, fax ID, transmission type, pages, communication mode, and status.
Task stacks	Prints address locations of various tasks
Translations	Prints text strings used in the display, beginning with the number you select. These text strings are printed in the language currently in use by the product. Compare the numbers in this report to the numbers in an English report to translate non-English messages on the display.
Printer fonts	Prints all characters of fonts available in memory
Firmware version (under “memory/ softswitch”)	Shows firmware revision information on the control panel display
White reference summary (under “scanner”)	Displays average, minimum, and maximum white reference values

Clear memory in extended service mode

3100 only

CAUTION

Clearing memory clears all parameters, which can render the product illegal or inoperable. Print the internal reports before clearing memory in extended service mode. The reports contain a record of all settings and can assist you in restoring the product to its settings.

To perform a system reset, use extended service mode to choose `Memory/softswitch`, and then choose `Clear memory`. Use the < and > keys to select the memory you want to clear:

- `Documents (and log)` deletes all documents stored in memory and all log information.
- `Phonebook` deletes all numbers stored in the phonebook.
- `Configuration` resets all menu settings printed in the configuration report to their defaults.
- `Softswitches` resets all softswitches to their defaults.
- `Counters` resets all page counts except the total number of pages printed. These page counts are printed at the end of the configuration report.
- `Everything` deletes and resets all of the above. Information retained includes white reference curve, total page count, and serial number.

Softswitches

3100 only

Note

Reset the country code softswitch whenever the formatter board is replaced or otherwise removed from the product, or when softswitches are reset to defaults.

Extended service mode allows you to change softswitches on the 3100 product. A softswitch is a set of eight bits. See the software service manual for a complete list of softswitches.

To change the country code softswitch

1. Press **Backspace**, **#**, *****, and *****, in sequence, to access the extended service menu.
2. Press **<** or **>** until `Memory/Softswitches` appears below `Service` on the control panel.
3. Press **Enter/Menu**.
4. If `Softswitches` does not appear below `Memory/Softswitches` on the control panel, press **<** or **>** until it appears.
5. Press **Enter/Menu**.
6. Use the keypad to enter **101** (the “country code” softswitch).
7. Press **Enter/Menu**.
8. Use the keypad to enter the sequence that corresponds to the country in which the product is used. (See the list on the following page.)

Country code softswitch sequences

Australia	00001011 (0B hex)
Denmark	00001100 (0C hex)
Finland	00001000 (08 hex)
France	00000111 (07 hex)
Germany	00000110 (06 hex)
Ireland	00000010 (02 hex)
Netherlands	00001101 (0D hex)
Norway	00000101 (05 hex)
Sweden	00000100 (04 hex)
United Kingdom	00000001 (01 hex)
United States	00000000 (00 hex)
Canada	00101001 (29 hex)

9 Press **Enter/Menu** to complete the softswitch change.

10 Press **Stop/Clear**.

The product will exit extended service mode within a few minutes.

Firmware download

3100 only

Newer versions of the firmware for the HP LaserJet 3100 product can be downloaded to the product.

To perform a firmware download

1 Restart the computer in MS-DOS® mode (do not use an MS-DOS window).

2 Press down and hold **Stop/Clear** while performing step 3.

3 Cycle power by unplugging the power cord from the power source, and then replugging in the power cord.

4 Type the following, substituting the current version of the firmware for XXX:

```
Copy /b leonXXX.rom lpt1:
```

Recalibrating the document scanner

3100 only

Recalibrate the document scanner if you notice that copies, items scanned to the computer, or faxes you send have black or white lines running through them.

To recalibrate the document scanner

1. Clean the HP LaserJet 3100 product before recalibrating it. (See “Cleaning the HP LaserJet 3100 product” in the product service manual.)
2. On the control panel, press **Enter/Menu**.
3. Press **<** once to display `Service` and press **Enter/Menu**.
4. Use the **<** and **>** keys to select `Scan Correction` and press **Enter/Menu**.
5. Insert a blank, bright white piece of letter-sized paper into the document feeder tray.

The HP LaserJet 3100 product pulls the piece of paper through and then prints a recalibration test page. Discard this page. The recalibration procedure is complete.

3 Power supply

Overview

This chapter details the distribution of AC and DC power.

Distribution of AC and DC power for the LaserJet 4000 series

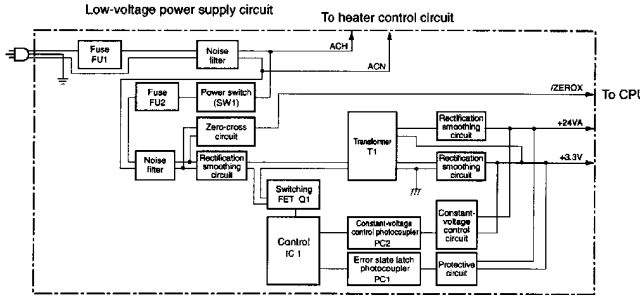
AC power is supplied to the low-voltage power supply circuit in the engine controller board when the power switch (SW 101) is turned on. The low-voltage power supply circuit supplies +24 V DC and +3.3 V DC to the printer. DC power drives the following items:

+24 VDC

- main motor
- scanner motor
- fan
- high-voltage power supply

+3.3 VDC

- sensors
- ICs on the engine controller board
- EIO accessories



Low-voltage power supply circuit (4000 series)

Distribution of AC and DC power for the LaserJet 5000 series

The AC line voltage for the LaserJet 5000 printer is applied through the main switch (SW 101) and supplied to the low-voltage power supply circuit through the fuse (FU1). The low-voltage power supply divides the AC voltage to +24 VDC, +5 VDC and +3.4 VDC and supplies them to the DC controller PCA. This circuit generates a zero-cross signal (ZEROX) and supplies it to the DC controller PCA.

DC power is supplied as follows:

+3.4 VDC

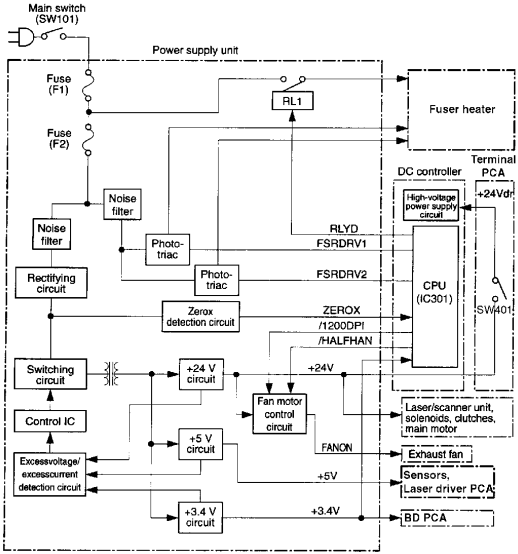
- ICs on the DC controller PCA and the BD PCA

+5 VDC

- laser driver PCA
- sensors

+24 VDC

- high-voltage power supply PCA to drive the main motor
- exhaust fan
- scanner motor
- clutches
- solenoids



Low-voltage power supply circuit (5000 series)

Distribution of AC and DC power for the HP LaserJet 3100

The AC, DC, and high-voltage power supply circuits are all contained within the ECU.

The AC power circuitry supplies AC voltage whenever the power cord is connected to the AC power source. AC voltage is distributed to the DC power supply circuitry and to the AC driver circuitry. The AC driver circuitry controls AC voltage to the heating element in the fusing assembly.

The DC power distribution circuitry distributes +5 V DC and +12 V DC as follows:

+5 V DC

- formatter
- photosensors
- DC controller circuitry
- laser/beam detect circuitry

+12 V DC

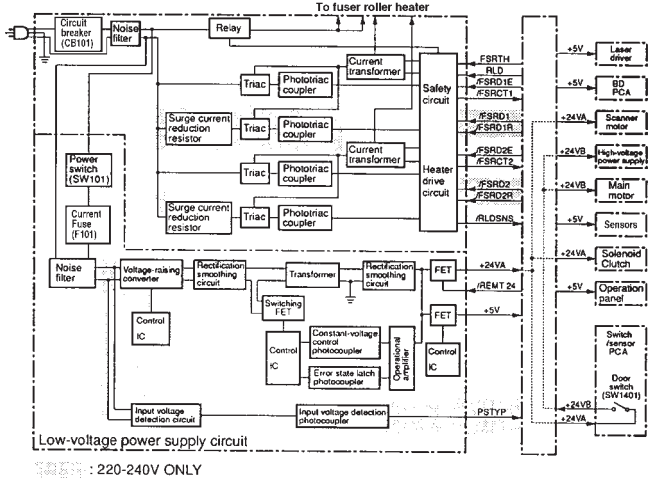
- motor
- scanner motor
- solenoid

+12VA DC

- high-voltage power supply

Distribution of AC and DC power for the HP LaserJet 8000 series

The AC and DC power supply circuits are contained in the low-voltage power supply (LVPS). The high voltages required for image formation are generated by the high-voltage power supply (HVPS). The low-voltage power supply and distribution system are illustrated below.



Low-voltage power supply circuit (8000 series)

Protection Systems

Problems on the load side, such as short-circuits, can cause an excessive flow of current from the DC power supplies or can generate abnormal voltage. When this happens, the excess-current and excess-voltage protection systems automatically shut off output voltage to protect the power supplies.

If the protection systems are activated and the power supply circuit does not output DC voltage, turn the printer off, correct the problem in the faulty load, and then turn the printer on again.

4 Input/Output (I/O)

Overview

This chapter provides information on cabling and the printer interface.

Bidirectional parallel interface

The formatter PCA receives incoming data through its bidirectional interface (IEEE 1284).

The bidirectional parallel interface (IEEE-1284 compliant) is compatible with Centronics parallel interfaces. To take advantage of its enhanced capabilities, such as bidirectional communication, the following must be provided:

- Software application support for these features.
- An IEEE-1284 compliant parallel cable with the correct pin configuration (see Table 4-1).

4000, 5000, and 8000 only

The user may configure the HIGH SPEED item in the Control Panel menu. The default setting, YES, allows the I/O to run at the higher speeds supported by most newer computers. When set to NO, the parallel interface runs at the slower mode that is compatible for older computers. The user may also configure the ADVANCED FUNCTIONS item. The default setting, ON, allows for two-way parallel communications. The OFF mode disables this advanced functionality.

Pin configurations

Signal Name	Printer Pin #	Parallel Port Pin #
nSTROBE	1	1
DATA 1	2	2
DATA 2	3	3
DATA 3	4	4
DATA 4	5	5
DATA 5	6	6
DATA 6	7	7
DATA 7	8	8
DATA 8	9	9
nACKNLG	10	10
BUSY	11	11
CALL (PE)	12	12
SELECT	13	13
nAUTOFd	14	14
On VDC (GND)	19 THRU 30	18 THRU 25
nFAULT	32	15
nSelIn	36	17

IEEE-1284 compliant parallel cables

HP helped develop the IEEE-1284 standard and is one of the first companies to introduce products that are compliant with it. HP offers four IEEE-1284 compliant parallel cables. Each is described below.

Part number	Length	Connector type
C2950A	2 meters (7 feet)	Host A to printer B (large) connector
C2951A	3 meters (10 feet)	Host A to printer B (large) connector
C2945A	2 meters (7 feet)	Host A to printer C (small) connector
C2946A	3 meters (10 feet)	Host A to printer C (small) connector
C2947A	10 meters (33 feet)	Host A to printer C (small) connector

Maximum I/O Cable Lengths

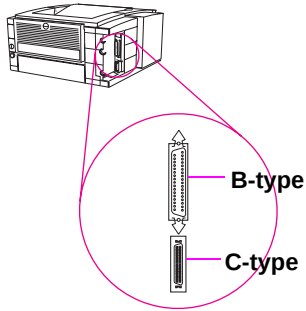
Serial RS-232C RS-422A	15 meters (50 feet) 610 meters (2000 feet)
Parallel (non-IEEE-1284)	3 meters (10 feet)
Parallel (IEEE-1284) with “B” type connector	3 meters (10 feet)
Parallel (IEEE-1284) with “C” type connector	10 meters (33 feet)

Attaching the printer cables

The printer's parallel port can have one or both of the following connectors:

B-type parallel (large)

C-type parallel (small)



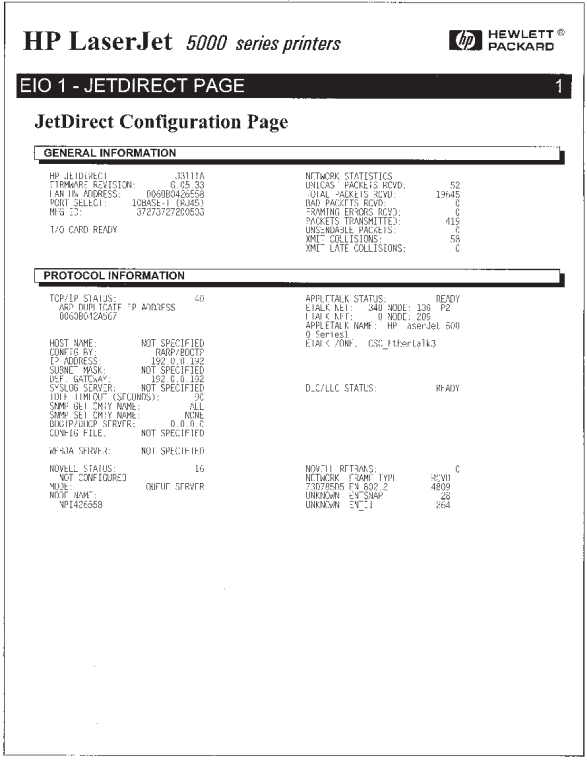
Printer interface connections

RS-232-C/RS-422-A serial interface

For this information, see the wiring diagram for common serial input/output cables in the printer service manual.

Configuring the computer interface

To configure the computer interface, see the *HP LaserJet Family Quick Reference Service Guide*, Volume I.



HP LaserJet *5000 series printers*

HEWLETT PACKARD

EIO 1 - JETDIRECT PAGE 1

JetDirect Configuration Page

GENERAL INFORMATION

HP JETDIRECT: J3111A
FIRMWARE REVISION: G.05.33
LAN HW ADDRESS: 0060B0426558
PORT SELECT: 10BASE-T (RJ45)
MFG ID: 3723727200503

I/O CARD READY

NETWORK STATISTICS
UNICAST PACKETS RCVD: 52
TOTAL PACKETS RCVD: 13645
BAD PACKETS RCVD: 0
FRAMING ERRORS RCVD: 0
PACKETS TRANSMITTED: 415
UNSENDABLE PACKETS: 0
XMIT COLLISIONS: 58
XMIT LATE COLLISIONS: 0

PROTOCOL INFORMATION

TCP/IP STATUS: 40
IP ADDRESS: 192.0.0.192
SUBNET MASK: NOT SPECIFIED
DEF. GATEWAY: 192.0.0.192
SYSLOG SERVER: NOT SPECIFIED
IDLE TIMEOUT (SECONDS): 90
SNMP GET CMTY NAME: ALL
SNMP SET CMTY NAME: NONE
BOOTP/DHCP SERVER: 0.0.0.0
CONFIG FILE: NOT SPECIFIED

WEBJA SERVER: NOT SPECIFIED

NOVELL STATUS: 16
NOT CONFIGURED
MODE: QUEUE SERVER
NDS TREE NAME:
NPI426558

APPLETALK STATUS: READY
ETALK NET: 340 NODE: 138 P2
TALK NET: 0 NODE: 209
APPLETALK NAME: HP LaserJet 5000 Series
ETALK ZONE: CSC_EtherTalk3

DLC/LLC STATUS: READY

NOVELL RETRANS: 0
NETWORK FRAME TYPE
3078565 EN_802.2 4809
UNKNOWN EN_SNAP 28
UNKNOWN EN_II 264

LocalTalk I/O*

The printer implements AppleTalk networking protocol through LocalTalk hardware. The LocalTalk network cable (HP part number 92215N) is connected through the EIO card.

Expanded I/O*

The optional expanded I/O card can be installed in the slots provided on the Formatter PCA. The expanded I/O card provides automatic I/O switching between multiple computers or networks connected to the printer. The network version printers include the HP JetDirect Multi-protocol Network Card with Ethernet/10Base-T and 10Base-2, and LocalTalk.

Flash*

Flash is provided in optional 2 and 4 megabyte (MB) flash memory DIMMs for storage of forms, fonts, and signatures.

Disk*

The optional EIO-based hard disk is used for creating multiple original prints (mopies) and for storing forms, fonts, and signatures.

*This feature does not apply to the HP LaserJet 3100.

5 Media specifications

Overview

Use media that meet the specifications listed on the following pages. By doing so, you will minimize the incidents of paper jams, prevent premature wear to the printer, and reduce repair costs. Hewlett-Packard recommends testing print media before buying it in large quantities.

Note

For complete paper specifications for all HP LaserJet printers, see the *HP LaserJet Family Paper Specification Guide*.

Paper sizes

Metric System

Size	Metric Dimensions	U.S. Dimensions
A0	841 x 1189 mm	33.1 x 46.8 in
A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3. in
B4 (ISO)	250 x 353 mm	9.8 x 13.9 in
B5 (ISO)	176 x 250 mm	6.9 x 9.8 in

Imperial (U.S.) System

Size	U.S. Dimensions	Metric Dimensions
Ledger	11 x 17 in	279 x 432 mm
Legal	8.5 x 14 in	216 x 356 mm
Letter	8.5 x 11 in	216 x 279 mm
Executive	7.3 x 10.5 in	191 x 267 mm
Custom	5.8 x 8.2 in to 8.5 x 14 in	149 x 210 mm to 216 x 356 mm
JIS B4**	10.1 x 14.3 in	257 x 364 mm
JIS B5**	7.2 x 10 in	182 x 257 mm
J Postcard*	3.9 x 5.8 in	100 x 148 mm
J Double Postcard*	5.8 x 7.9 in	148 x 200 mm

* J - Japanese
** JIS Japanese Industry Standard

Paper specifications

Category	Specifications
Acid content	5.5 pH to 8.0 pH
Basis weight: 4000 series Tray 1 4000/4000 N Tray 2 4000 T/4000 TN Tray 2 and Tray 3 4000 series optional 500-sheet tray 4000 series Duplexer	 60 to 199 g/m^2 (16 to 53 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs)
5000 series: Tray 1 Tray 2 or optional 250-sheet Tray Optional 500-sheet Tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
3100: Paper input bin Single-sheet input slot Document feeder tray	60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 44 to 105 g/m^2 (12 to 28 lbs) (up to 67 lbs using the special media lever)
8000 series: Standard output bin Left output bin Optional 2000-sheet input tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
Optional envelope feeder: 4000 series 8000 series	 75 to 105 g/m^2 (20 to 28 lbs) 60 to 90 g/m^2 (16 to 24 lbs)
Caliper	3.0 to 7.0 mils (0.094-0.18 mm)
Curl in ream	Flat within 5 mm (0.2 in)
Condition of cut edge	Cut with sharp blades with no visible fray
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205°C (400°F) for 0.1 second
Grain	Long grain
Moisture content	4% to 6% by weight
Smoothness	100-250 Sheffield

Paper weight equivalences

Use this table to determine approximate equivalent points in weight specifications other than U.S. bond weight. For example, to determine the equivalent of 20 lb U.S. bond weight paper in U.S. cover weight, locate the bond weight (in row 3, fourth column) and scan across the row to the cover weight (in the sixth column). The equivalent is 28 lb.

Note

Shaded areas indicate a standard weight for that grade.

Metric wt (g/m^2)		**U.S. weights (lb) or thickness (mm)**						
Europe	Japan	Postcard* thickness	Bond Wt	Text book Wt	Cover Wt	Bristol Wt	Index Wt	Tag Wt
60	60		16	41	22	27	33	37
64	64		17	43	24	29	35	39
75	75		20	50	28	34	42	46
80	80		21	54	30	36	44	49
80	81		22	56	31	38	46	51
90	90		24	60	33	41	50	55
100	100		27	68	37	45	55	61
105	105		28	70	39	49	58	65
120	120		32	80	44	55	67	74
120	128		34	86	47	58	71	79
135	135		36	90	50	62	75	83
148	148	0.18	39	100	55	67	82	91
157	157	0.19	42	107	58	72	87	97
163	163	0.20	43	110	60	74	90	100
176	176	0.23	47	119	65	80	97	108
199	199		53	134	74	90	110	122

* U.S. postcard measurements are approximate. Use for reference only.

Troubleshooting paper problems

Paper problems can be difficult to detect. The following series of steps will help isolate paper-induced problems versus printer problems:

- Isolate a paper path.
- Isolate a brand of paper.
- Isolate a type of paper.
- Evaluate paper-use practices.
- Evaluate environmental conditions.

Here are some paper usage tips:

- Turn the paper over and print on the other side. Doing so often corrects excess paper curl.
- Rotate the paper 180° (end-for-end) to feed a different leading edge. This can help correct multi-sheet feeding problems.

Papers to avoid

- NCR self-carbon (or “carbonless” paper)
- paper that has been preprinted (such as letterhead) with ink that will not withstand fuser heat (205° C [400° F] for 0.1 second)
- plastic-fiber paper
- embossed paper
- paper with cutouts or perforations
- chemically treated paper
- coated paper
- synthetic paper
- multi-part forms
- odd-sized paper

If your printer is having trouble with paper jams, multi-feeds, or misfeeds, use HP-brand paper: HP 20 lb Multi-Purpose Paper, part number 9300-2092; HP 24 lb LaserJet Paper, part number 9300-2091.

General tips

Paper curl

Paper curl results from both the heating process used to bond the print image (toner) to the paper and from the path that the paper must negotiate through the printer.

Take the following actions to help reduce paper curl:

1. Turn the paper over in the input tray. Some paper packages (reams) have an arrow indicating the preferred printing side. Experiment to determine which orientation yields the least curl.
2. Try a different output paper path (if available for your printer). Using the “face-up” output path may yield more acceptable results than the standard “face-down” output bin.
3. Protect the paper from adverse environmental conditions prior to use. Paper designed for laser printing has an initial moisture content of 4-6 percent which is maintained as long as it is stored properly. Once the paper has been removed from its packaging it will dry out or absorb additional moisture, depending on the environment. Excess moisture in the paper will increase the amount of curl.
4. Try a different type or brand of paper. Not all paper is designed for laser printing.

Much of the paper curl that is induced by the laser printer fusing process will tend to relax within the first 24 hours following printing. However, the curl on the leading edge of the page may remain longer because the leading edge tends to remain in contact with the fusing roller for longer periods.

Envelope specifications

Category	Specifications
Basis weight	Should not exceed 105 g/m^2 (28 lb)
Caliper	3.3 to 5.5 mils (0.084 to 0.14 mm) single layer thickness
Curl	Less than 6 mm (0.25 in) curl across entire surface
Finishing	Accurate, sharply creased folds with no more than two thicknesses of paper at the leading edge
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second
Moisture content	4% to 6% by weight
Paper	Must meet all the normal paper specifications
Smoothness	100 to 250 Sheffield

Envelope sizes

Imperial (U.S.) system

Size	U.S. Dimensions	Metric Dimensions
Tray 1: Minimum Maximum	 3 x 5 in 8.5 x 14 in	 76 x 127 mm 216 x 356 mm
Optional envelope feeder: Minimum Maximum	 3.5 x 6.3 in 7 x 10 in	 90 x 160 mm 178 x 254 mm

Envelopes to avoid

Do not use the following envelopes:

- with clasps, snaps, or tie strings
- with transparent windows, holes, perforations, or cutouts
- having an open flap with adhesive exposed
- having paper, inks, adhesives, or materials that discolor, melt, offset, or release hazardous emissions when exposed to 205° C (400° F)
- having extremely smooth, shiny, rough, textured, or deeply embossed surfaces
- damaged, wrinkled, or irregularly shaped
- constructed with encapsulating adhesives that do not require moistening, but rely instead on pressure to seal them

Preventing printer malfunctions caused by envelopes

When you are printing on envelopes, use these preventive measures to avoid printer malfunctions.

- Carefully feed the envelopes into the printer.
- Be aware of the envelope’s construction.

Envelope feeding

Follow these preventive measures when feeding envelopes:

- Envelopes can be manually fed through the printer or they can be fed automatically through an envelope tray or feeder.
- Closely inspect the leading edge of the envelopes before feeding them into the printer. Ensure that the leading edge is flat. Watch for envelope curl. Flatten the leading edge of the envelope before printing.
- Be patient; in manual feed mode the printer displays a message when it is ready to accept the next envelope. Wait for this message to appear before inserting the next envelope.
- Do not allow a large quantity of envelopes to accumulate in the output bin.
- On most printers, use the rear (or front) output bin (if available) when printing envelopes. Do not use the top (face-down) output bin.

Envelope construction

- The corner folds need to be well-creased, with no more than two thicknesses of paper.
- The envelopes must lay flat.
- The paper grain should be diagonal to the direction of the feed.
- Adhesives must meet HP specifications for fusing compatibility.
- Basis weight must not exceed 105 g/m^2 (28 pounds).
- Do not use envelopes with clasps, snaps, tie strings, or windows.
- Do not use envelopes made of synthetic materials.

Label specifications

Category	Specifications
Adhesive	Must not be on any external surfaces of the label before, during, or after printing. Label construction and die-cutting must not allow labels to peel off during transport, printing, or fusing.
Caliper	Must not exceed 0.18 mm (0.007 in)
Curl	In ream: flat within 13 mm (0.5 in)
Finishing precision	Cut sheet within 0.79 mm (0.031 in) of nominal and 0.20° square
Fusing compatibility	All adhesions, carrier sheets, top sheets, and other materials used in label construction must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.
Packaging	Use moisture-proof wrap to preserve properties.

Preventing printer malfunctions caused by adhesive labels

As with envelopes, prevention is the best way to avoid printer malfunctions caused by adhesive labels. To prevent paper jams and feed problems, labels must meet the following requirements:

- Be cut long grain (as opposed to short grain).
- Totally cover the carrier sheet (no spaces between labels, no removed labels).
- Contain no excessive glue. (The adhesive should be acrylic-based emulsion and should not come into direct contact with the printer.)
- Meet HP specifications for fusing compatibility.
- Meet HP specifications for caliper.
- Have a carrier sheet that is not too smooth.
- Use the flat paper path (manual feed slot and rear, or front, face-up delivery door), which is the recommended printing method.

Transparency specifications

Category	Specifications
Caliper	3.9 to 4.3 mils (0.100 to 0.110 mm)
Cutting angle	90° ± 0.2°
Finishing precision	Cut sheet to within 0.8 mm (0.03 in) of nominal and ± 0.2° of square
Fusing compatibility	Overhead transparency material must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset material, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.

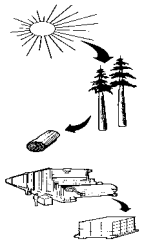
Preventing printer malfunctions caused by transparencies

Use these preventive measures to avoid printer malfunctions caused by transparencies:

- Use the straightest paper path to avoid curling and other problems.
- Use transparencies with the correct resistivity.
- Use transparencies that meet HP specifications for fusing compatibility.
- Remove each printed sheet from the tray and place it on a flat surface before printing the next sheet.

HP paper training video

HP has developed a training video focusing on how paper is manufactured and how the manufacturing process relates to the use of paper in HP LaserJet printers. Part numbers are shown below.

	Part Number	Version (VHS Format)
 The Paper Video explains the manufacturing process.	5961-0711	National Standard Television Committee (NTSC) version (U.S.)
	5961-0712	PAL version (Europe, Asia)

6 Toner cartridge information

Overview

This chapter provides information on toner cartridges and their use. Hewlett-Packard recommends using HP toner cartridges, which are designed specifically to enhance the output from the HP LaserJet family of printers.

Cartridge weights and page counts

HP LaserJet	Product	Cartridge	Full weight	Empty weight	Page count at 5% coverage
4000 series	C4127A	EP-A	1295 gm (45.7 oz)	1020 gm (36 oz)	6,000
4000 series	C4127X	EP-X	1445 gm (51 oz)	1000 gm (35.3 oz)	10,000
5000 series	C4129X		1880 gm (66.3 oz)	1450 gm (51.1 oz)	10,000
3100	C3906A		730 gm (26.1 oz)	640 gm (22.7 oz)	2,500
8000 series	C3909A		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000
Mopier 240	C3909S		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000

Potential toner cartridge issues

Banding

When printing with a laser printer, the toner is applied across the page in horizontal strips. The page is moved through the printer and toner is continually applied. When printing text or black image pages, a large amount of toner is deposited on the page. As the amount of toner deposited on the page decreases, slight speed variations become more apparent. As the resolution (dots per inch) and the speed (pages per minute) increase, a variation in pattern intensity may appear on the page as lines or bands.

The bands are more visible in certain grayscale patterns. High speed printers that are capable of printing high resolution grayscale patterns are more likely to display the pattern variations. Changing the grayscale pattern or reducing the resolution may significantly reduce the amount of banding that occurs.

Character voids

Small gaps or voids may appear in some of the characters when printing on media other than standard photocopier paper. These “character voids” occur because some print media does not accept the transfer of toner as well as others.

To minimize the occurrence of character voids, avoid media with a rough finish. Use media that is within the Hewlett-Packard paper specifications listed in the user guide or the *HP LaserJet Family Paper Specification Guide*. If the finish is too rough, the surface will consist of large inconsistencies. If the finish is too smooth, toner will not adhere well. Adjusting the print density may affect the severity of character voids.

Toner cracking

When the paper is folded and the crease aligns with a line of text, it is possible with certain types of paper for the text to break along the line, giving the appearance of a white line through the text. Papers that do not meet the smoothness (100-250 Sheffield, 100-500 Bendtsen) or wax pick (>11 Dennison) are likely to exhibit this effect more than others.

Toner in the HP LaserJet printers is composed of minute particles of pigmented plastic material (styrene) and iron oxide. When the toner is subjected to the fusing temperature, these individual iron-impregnated plastic particles become part of a larger plastic image on the page. When the printed page is subsequently folded, the plastic image must also give, in some fashion, to accommodate the fold. If the print image has been well-set into the paper, this resulting break in the plastic will not be apparent. However, if the toner is unable to adequately penetrate the paper fibers or if, in the process of folding the paper, the paper fibers behind the toner break away from the page itself, the result will be a “white line” through the image. There are several ways to minimize this effect:

- Ensure that the paper being used meets all of the specifications provided in the *HP LaserJet Printer Family Paper Specification Guide*; in particular the smoothness and wax pick.
- A lighter density setting will ensure that the toner image will be composed of less plastic material, thus minimizing the resulting effect of trying to fold the toner image.
- For the reasons listed earlier, a more narrow character-stroke width might also help.
- Magnetic Ink Character Recognition (MICR) paper may fix toner cracking problems (see also the *HP MICR User’s Guide*).

In xerographic (laser) printing, using paper that has a laid finish often causes problems. The surface roughness of the paper is often responsible for the problems.

Paper that is stiffer than xerographic paper also causes problems. Stiff papers do not fold well. When stiff paper is folded and a toner image is applied to the paper’s surface, the problems are even worse.

Transfer of toner image

After printing a document on an HP LaserJet printer, folding it, and sending it through the mail, you might observe that a portion of the print image was transferred to opposing surfaces of the folded document.

The laser printing process uses a pigmented plastic powder (toner) to form a print image that is first transferred to a sheet of paper (or other print medium) and then melted (fused) onto the surface of the paper to form a permanent image. Though paper is usually thought of as being “soft,” it is actually quite abrasive. When the printed page is folded, movement under pressure between a paper surface and the toner image may cause the paper to abrade (scratch) the toner, causing a transfer of the toner material onto the opposing surface of the paper. This can be demonstrated by rubbing a print image against (or into) a clean sheet of paper.

Some machinery, such as that used by the U.S. Postal Service to sort mail, can apply the necessary pressure and agitation to cause this toner image transfer phenomenon.

To minimize this effect:

- Minimize the amount (or height) of toner used to produce the print image.
- Use a paper that is less abrasive.
- Ensure optimal fusing of the toner (print) image to the paper.

The **amount** of toner used to produce a print image is controlled by the print density dial, slide, or control panel settings in the HP LaserJet printers. The print density should be adjusted for a **lighter** image to reduce the amount (height) of toner prone to abrasive transfer.

HP LaserJet printers have been designed for optimum results with xerographic (laser) bond papers, such as XEROX 4024 photocopy paper. The properties of this type of paper (for example, surface roughness, composition, moisture content) are such that the other causes of potential toner transfer are minimized. Photocopy papers are typically less abrasive than other types of paper (such as writing bond) and are also formulated to ensure optimal fusing of the toner image. Using other types of paper will generally yield less than optimal results in laser printers. For help in selecting paper suitable for use in the

HP LaserJet printers, refer to the *HP LaserJet Printer Family Paper Specification Guide*. This guide can be ordered by calling HP Parts Direct at 800-227-8164 in the U.S., or HP Distribution at 970-339-7009.

Because of the way that laser printing is accomplished, currently there is no way to entirely eliminate the possibility of toner transfer. However, using these techniques should yield more satisfactory results and will often reduce the problem to imperceptible levels.

Gray background on envelopes

Poor print quality is normally the result of using envelopes that are of the incorrect weight or finish. The paper used to construct the envelope may be embossed; or may be too heavy, too rough or too slick; or may be made in such a way that it is incompatible with the high temperatures encountered in toner fusing. The result is that the toner does not adhere well to the surface. Also, on heavier envelopes, a gray background may appear on the front (or print side) of the envelope. To reduce the gray background, the print density may need to be set to a darker setting.

HP PLANET PARTNERS

The U. S., Canada, Europe, and Australia now have HP toner cartridge recycling programs. The used toner cartridge should be placed in the wrapper and box that held the new cartridge and sent back for recycling.

U.S.

A brochure explaining the recycling program in the U.S., part number 5091-1325EUS, can be ordered. The customer returns used toner cartridges via UPS at no cost to the customer using shipping labels included in the brochure. The toner cartridges can be shipped one at a time or in volume shipments. Some of the parts are recycled to make new cartridges. Other parts are melted for re-use as raw materials. If the customer has any questions, and to receive the free recycling brochure, refer them to the Customer Information Center at (800) 752-0900.

AUSTRALIA

Australian customers can send their toner cartridges to their local HP dealer. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

EUROPE

The recycling program in Europe currently includes these countries: Germany, Switzerland, Austria, United Kingdom, the Netherlands, and Sweden. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

CANADA

Canada uses Federal Express for their recycling program. At least eight but no more than 40 Toner Cartridges can be shipped at one time. Shipments of less than eight cartridges are at the shipper's expense. Call Federal Express at (800) GoFedEx; (800) 463-3339 to arrange for free pickup of the bundled cartridges. Fill out a Federal Express Waybill or obtain a preprinted one from your dealer.

In Alberta, B.C., Manitoba, NWT, Saskatchewan, and the Yukon,
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6551 Westminister Hwy, Unit 160
Richmond, B.C. V7C 4V4
Acct. No.: 1246-1740-5

In the Atlantic provinces, Ontario, and Quebec
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6600 Goreway Drive, Unit C
Mississauga, Ontario L4V 1S6
Acct. No.: 1246-1740-5

For more information, call: Canada wide: (800) 387-3867
Dept. 129; Toronto: (800) 678-9430 Ext. 4981

Note

Recycling information is included in the toner cartridge package.

For additional information about HP corporate-wide, environmental policies, practices, and awards, visit **www.hp.com**.

Refill Statement

Hewlett-Packard toner cartridges have been designed to maximize the reliability of the HP LaserJet printer by including all of the components that need frequent replacement or adjustment within the cartridge. While we recognize that all parts of this critical printer mechanism will not wear consistently, the HP toner cartridge has been designed to optimize the exceptional print quality that is synonymous with the HP LaserJet printer name. While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or under a maintenance contract, we also do not recommend their use for the following reasons:

1 The HP LaserJet toner cartridge is not designed to be refilled or remanufactured.

2 Hewlett-Packard has no control or process to ensure that a refilled toner cartridge will function at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict what the long-term effect on the printer's reliability could be from using different toner formulations found in refilled cartridges. Because the HP LaserJet printer has the highest reliability reputation in the industry, we are concerned about any usage that might affect this reputation.

3 Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge. The print quality of the HP LaserJet toner cartridge directly influences the customer's perception of the HP LaserJet printer itself. The high print quality of the HP LaserJet printer is one of the primary reasons for the success of the product and we are keenly interested in maintaining that image.

The entire family of HP LaserJet printers is covered under a standard one-year warranty from the date of purchase. Hewlett-Packard offers optional maintenance contracts after the one-year warranty expires. The use of refilled toner cartridges alone does not affect either the warranty or any maintenance contract purchased from HP. **However, if an HP LaserJet printer failure or damage is found to be directly attributed to the use of a refilled toner cartridge, the repair will not**

be covered under the warranty or by the maintenance contract. Rather, standard time and material charges will be applied to service the printer for that particular failure or damage.

Hewlett-Packard is constantly striving to provide the highest quality printer products possible. The HP LaserJet printer family was designed for optimum output performance when the printing mechanism is periodically replaced with a new HP toner cartridge. The HP toner cartridge is designed specifically to enhance the output from the HP family of printers. We know that the highest quality print results will be obtained when new HP toner cartridges are used with HP LaserJet printers.

7 Printer options and replaceable parts

Overview

The following tables list the products, product numbers, product descriptions, and service part numbers for each printer. Parts can be ordered through HP Parts Direct Ordering at (800) 227-8164 (U.S. only). For additional product support, see the inside back cover of this guide.

Printer options and replaceable parts

Product	Product Number	Product Description	Service Part Number
Memory	C4135A	4 MB EDO DIMM	C4135-67901
	C4136A	8 MB EDO DIMM	C4136-67901
	C4137A	16 MB EDO DIMM	C4137-67901
	C4140A	4 MB SDRAM DIMM	C4140-67901
	C4141A	8 MB SDRAM DIMM	C4141-67901
	C4142A	16 MB SDRAM DIMM	C4142-67901
	C4143A	32 MB SDRAM DIMM	C4143-67901
	C3913A	64 MB SDRAM DIMM	C3913-67901
	C4286A	2 MB Flash DIMM	N/A
	C4287A	4 MB Flash DIMM	N/A
Fonts	C4292A	Traditional Chinese Font DIMM (8 MB Asian ROM)	N/A
	C4293A	Simplified Chinese Font DIMM (8 MB Asian ROM)	N/A
	D4838A	Korean (8 MB Asian ROM)	N/A
Enhanced I/O Cards	J3110A	Ethernet RJ-45 only	N/A
	J3111A	Ethernet RJ-45 and BNC, LocalTalk	J3111-61003
	J3112A	Token Ring RJ-45 and DB-9	N/A
	J3113A	10/100Base-TX networks	N/A
Hard Disk	C2985A	Hard Disk	N/A

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Product	Product Number	Product Description	Service Part Number
Parallel Cables	C2950A	Parallel IEEE-1284 compliant A to B (2.0 m)	N/A
	C2951A	Parallel IEEE-1284 compliant A to B (3.0 m)	N/A
	C2945A	Parallel IEEE-1284 compliant A to C (2.0 m)	N/A
	C2946A	Parallel IEEE-1284 compliant A to C (3.0 m)	N/A
	C2947A	Parallel IEEE-1284 compliant A to C (10.0 m)	N/A
Serial Cables	C2932A	9-9 pin serial cable (male/female)	N/A
	C2933A	9-25 pin serial cable (male/female)	N/A
	C2809A	25-9 pin serial adaptor (male/female)	N/A
	92215S	Macintosh Computer Serial Cable	N/A
	92215N	Macintosh Network Cable Kit	N/A
Trays	C4781A	2,000-sheet Input Tray and Paper Feeder	N/A
	C4124A	500-sheet Paper Feeder and Tray	C4125-67901
	C4125A	500-Sheet Universal Replacement Tray	N/A
	C3122A	Standard 500-sheet Tray	N/A
	C4115A	500-sheet Paper Feeder and Tray	N/A
	C4117	500-Sheet Replacement Tray	C4117-69001

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Product	Product Number	Product Description	Service Part Number
Trays, continued	C4780A	Two 500-sheet trays and Paper Feeder	N/A
	C4114A	250-sheet Paper Feeder and Tray	N/A
	C4126A	250-sheet Universal Replacement Tray	C4126-67901
	C4116A	250-sheet Replacement Tray	C4116-69001
	C4098A	Tray 2 (500-sheet Input Tray) or Tray 4 (2 x 500-sheet Input Tray)	RG5-3951-000CN
	C4099A	Tray 3 (500-sheet Input Tray) or Tray 5 (2 x 500-sheet Input Tray)	RG5-3952-000CN
Envelope Feeder	C4122A	Envelope Feeder	C4122-69001
	C3765B	Envelope Feeder	
Duplexer	C4123A	Duplex Printing Accessory	C4123-69001
	C4113A	Duplex Printing Accessory	C4113-69001
	C4782A	Duplex Printing Accessory	
Mailbox	C4783A	7-bin Tabletop Mailbox	
	C4785A	Multibin Mailbox	
	C4787A	5-bin Mailbox with stapler	
Media	HPM1120	HP Multi-purpose Paper	M1120
	HPJ1124	HP LaserJet Paper	J1124

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Product	Product Number	Product Description	Service Part Number
Toner Cartridges	C4127A	Toner Cartridge (6,000 pages)	N/A
	C4127X	Toner Cartridge (10,000 pages)	N/A
	C4129X	Toner Cartridge (10,000 pages)	N/A
	C3906A	Toner Cartridge (2,500 pages)	N/A
	C3909A	Toner Cartridge (15,000 pages)	N/A
	C3909S	3 Toner Cartridges (15,000 pages) (Mopier 240)	N/A
Power Box	C4789A	Connects a multibin mailbox to the printer when the printer is on a printer stand.	N/A
Upgrade Kit	C4095A	LJ 5Si to LJ 8000 Upgrade Kit	N/A

4000	5000	8000	3100
●			
●			
	●		
			●
		●	
		●	
		●	

Product	Product Description	Service Part Number	Exchange Number
Maintenance Kit	Service Maintenance Kit with 110V fuser (4000 series)	C4118-67902	C4118-69001*
	Service Maintenance Kit with 220V fuser (4000 series)	C4118-67903	C4118-69002*
	Service Maintenance Kit with 110V fuser (5000 series)	C4110-67902	C4110-69006*
	Service Maintenance Kit with 220V fuser (5000 series)	C4110-67903	C4110-69007*
	Preventative Maintenance Kit with 110 V fuser (8000 series)	C3971B	C3971-69002*
	Preventative Maintenance Kit with 220 V fuser (8000 series)	C3972B	C3972-69002*

*Requires exchange

4000	5000	8000	3100
•			
•			
	•		
	•		
		•	
		•	

8 Printer parts

Overview

This chapter provides the part numbers and descriptions of the most commonly used assemblies and subassemblies in the HP LaserJet printers. The shaded numbers in the tables refer to the location of the part in the printer, as shown in the corresponding illustrations.

Note

See your printer service manual for a complete listing of hardware components.

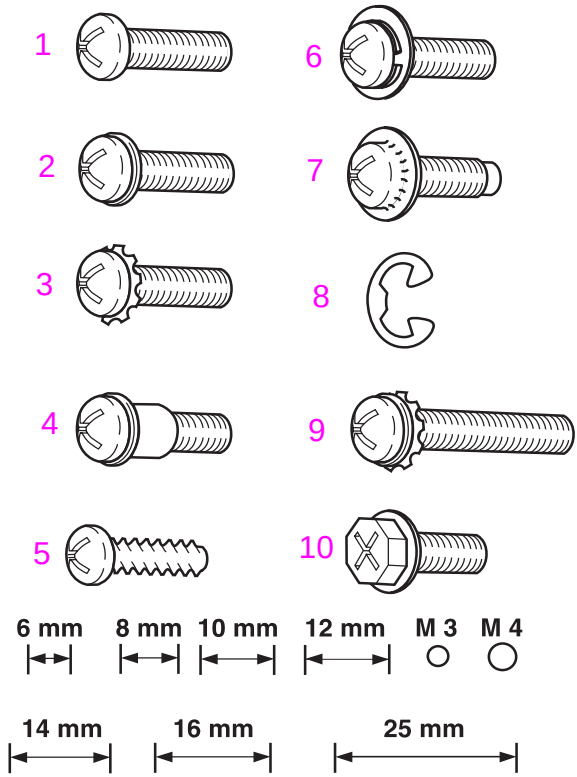


Figure 8-1 Common Hardware

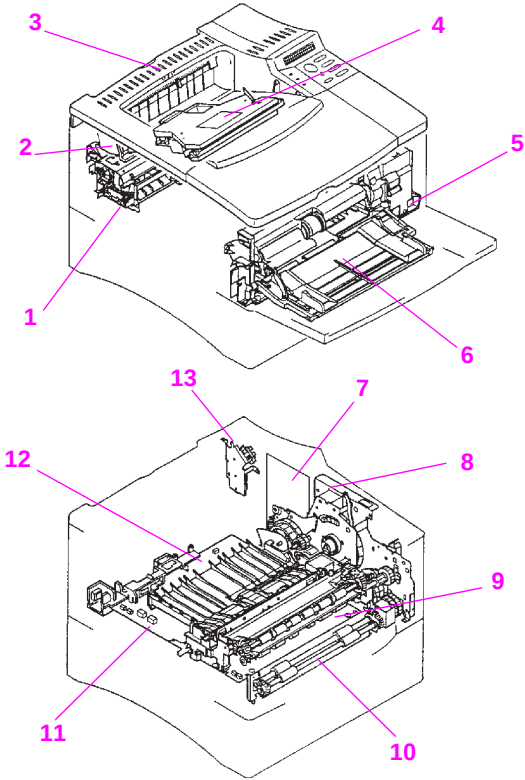
Common Hardware

	Part Number	Product Description	
1	XB1-2300-606CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-507CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-607CN	BH3 x 6mm	Pan-head Phillips
1	0515-1895	M3 x 8mm	Pan-head Phillips
1	XB1-2301-407CN	M4 x 14mm	Pan-head Phillips
1	XB1-2400-606CN	M4 x 6mm	Pan-head Phillips
1	XB1-2400-809CN	M4 x 8mm	Pan-head Phillips
1	0515-1912	M4 x 8mm	Pan-head Phillips
1	XB1-1300-807CN	M3 x 8 mm	Pan-head Phillips
2	FA9-1449-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0267-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0253-000CN	M3 x 8mm	Washer-head Phillips
2	XA9-0542-000CN	M3 x 10mm	Washer-head Phillips
2	XA9-0540-000CN	M4 x 8mm	Washer-head Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0389-000CN	M3 x 8mm	Star-washer Phillips
3	XA9-0654-000CN	M3 x 10mm	Star-washer Phillips
3	XA9-0192-000CN	M4 x 6mm	Star-washer Phillips
3	XA9-0828-000CN	M3 x 6mm	Star-washer Phillips
4	RBI-5552-000CN	M3	Shoulder Screw Phillips
4	RAI-7636-000CN	M3	Shoulder Screw Phillips
4	RBI-5489-000CN	M3 x 4mm	Shoulder Screw Phillips
4	XA9-0342-000CN	M3 x 8mm	Shoulder Screw Phillips
5	XB4-7300-609CN	M3 x 6mm	Self-tapping Phillips
5	XB6-7300-607CN	M3 x 6mm	Self-tapping Phillips
5	XB4-7400-809CN	M4 x 8mm	Self-tapping Phillips
5	XA9- 0870-000CN	M4 x 10mm	Self-tapping Phillips (black)
5	XB4-7401-009CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-007CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-209CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0773-000CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0916-000CN	M4 x 14mm	Self-tapping Phillips
6	XA9-0253-000CN	M3 x 8mm	Loose Flat/Lock Washer Phillips
6	XA9-0584-000CN	M3 x 12mm	Loose Flat/Lock Washer Phillips

	Part Number	Product Description	
7	FA9-1449-000CN		Star-washer trus-head Phillips
7	XB1-2302-507CN	M3 x 25mm	Trus-head Phillips
7	XB6-7300-809CN	M3 x 8mm	Trus-head Phillips
7	XA9-0326-000CN	M3 x 4mm	Trus-head Phillips
7	XB6-7300-807CN	M3 x 8mm	Trus-head Phillips
8	XD2-1100-242CN	2.4mm	Retaining Ring (e-type)
8	XD2-1100-322CN	3.2mm	Retaining Ring (e-type)
8	XD2-1100-402CN	4.0mm	Retaining Ring (e-type)
8	XD2-1100-502CN	5.0mm	Retaining Ring (e-type)
8	XD2-1100-642CN	6.4mm	Retaining Ring (e-type)
8	XG9-0260-000CN		Retaining Ring (e-type)
8	XD2-2300-507CN	5.0mm	Grip Ring (c-type)
9	XA9-0375-000CN	3m x 25 mm	Loose Flat/Star Washer Phillips
10	XA9-0686-000CN	M3 x 6mm	Hexhead Screw
10	XA9-0724-000CN	M3 x 8 mm	Hexhead Screw
10	XA9-0824-000CN	M3 x 10mm	Hexhead Screw
10	XA9-0813-000CN	M3 x 8mm	Hexhead Screw with washer

Notes

Parts for the HP LaserJet 4000 series

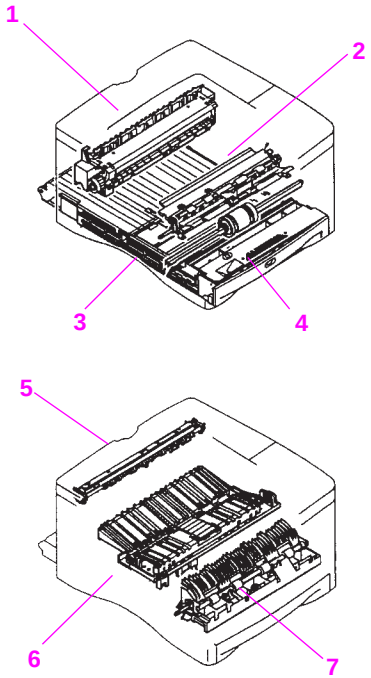


HP LaserJet 4000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4118-69003 (110V)** C4118-69004 (220V)**
2	Paper Delivery Assembly	RG5-2648-000CN
	Paper Pick-up Drive Assembly	RG5-2690-000CN
	Pick-up Roller	RB1-8865-000CN
	Feed Separation Roller	RF5-2490-000CN
	Drive Coupler	RB1-8877-000CN
3	Top Cover Assembly	RG5-2663-000CN
	Front Panel	RG5-2666-000CN
4	Laser Scanner Assembly	C4110-69008**
5	Tray 1 Pick-up Assembly	RG5-2655-000CN
	Tray 1 Pick-up Roller	RG5-3718-000CN
6	Tray 1 Assembly	RG5-2656-000CN
7	Formatter Assembly	C4118-69008**
8	Printer Drive Assembly	RG5-2653-000CN
	Release Rod	RB1-8756-000CN
	Main Motor	RH7-1331-000CN
9	Registration Assembly	RG5-2652-000CN
10	Paper Feed Assembly	RG5-2651-000CN
	Clutch	RB1-8974-000CN
11	ECU (Engine Controller Board)	C4118-69006 (110V)** C4118-69007 (220V)**
12	Paper Feed Guide Assembly	RG5-2643-000CN
	Paper Feed Belt	RB1-8668-000CN
	Transfer Roller	RG5-4283-000CN
13	Delivery Drive Assembly	RG5-3721-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



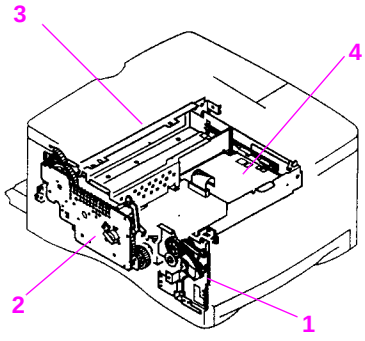
Major assembly locations (1 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4110-69002 (110V)** C4110-69003 (220V)**
2	Registration Assembly	RG5-3524-000CN
3	Paper Pick-up Assembly	RG5-3521-000CN
	Pick-up Roller	RB2-1820-000CN
4	Paper Tray	C4116-69001 (250-sheet)** C4117-69001 (500-sheet)**
5	Upper Delivery Assembly	RG5-3542-000CN
	Delivery Roller	RB2-1984-000CN
6	Paper Feed Belt Assembly	RG5-3526-000CN
	Paper Feed Belt (Large)	RB2-1887-000CN
	Paper Feed Belt (Small)	RB2-1888-000CN
	Transfer Roller	RG5-3579-000CN
7	Paper Feed Roller Assembly	RG5-3522-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



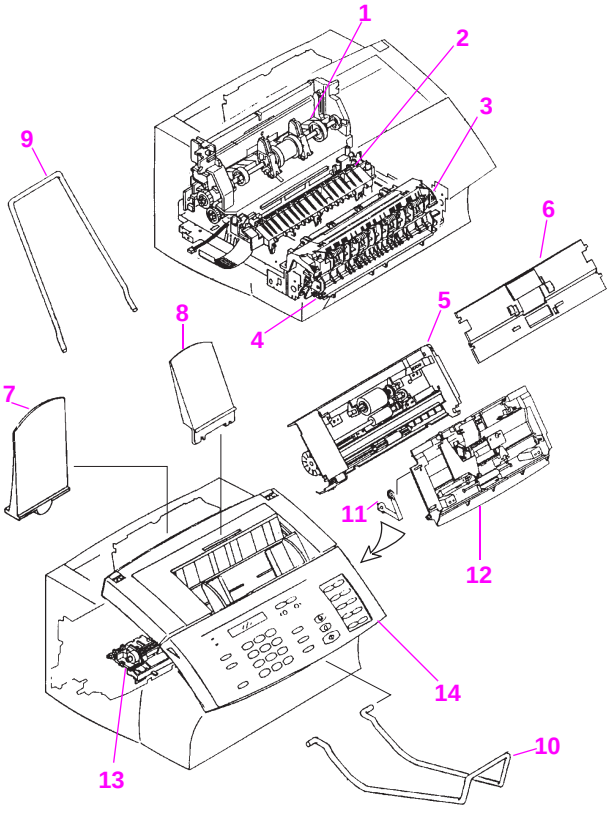
Major assembly locations (2 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Pick-up Drive Assembly	RG5-3544-000CN
	Spring	RS5-2434-000CN
2	Main Gear Assembly	RG5-3543-000CN
	Main Motor	RH7-1357-000CN
3	DC Controller	C4110-69001**
4	Formatter	C3974-69001**
	Laser Scanner Assembly	C4110-69008**
	DC Power Supply	C4110-69004 (110V)** C4110-69005 (220V)**
	Top Cover	RB2-1748-000CN
	Front Panel	RG5-3604-000CN
	Fan	RH7-1354-000CN
	Toner Cartridge Engagement Arm	RB2-1856-000CN
	Separation Pad with Spring	RG5-3585-000CN
	Paper-handling PCA	RG5-3560-000CN
	MP Separation Pad	RF5-2400-000CN

**These parts require exchange

Parts for the HP LaserJet 3100



Major assembly locations

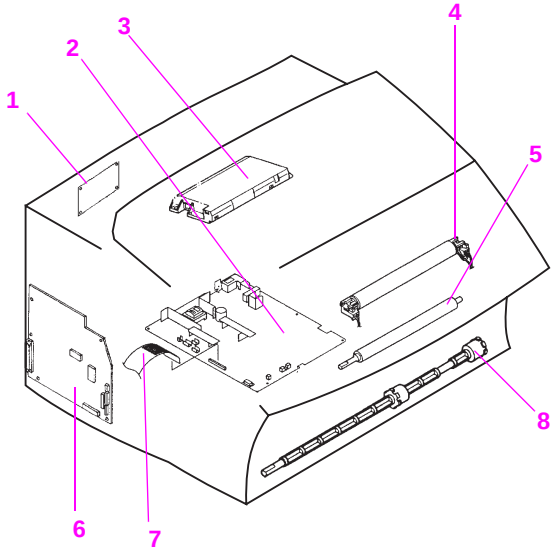
HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Paper Pick-up Assembly	RG5-3484-000CN
	Pick-up Roller Assembly	RG5-3486-000CN
	Clutch	RB1-7197-020CN
	Separation Arm Assembly	RB1-7181-000CN
	Input Sensor Assembly	RB1-7182-000CN
	Solenoid	RH7-5139-000CN
2	Transfer Guide Assembly	RG5-3452-000CN
	Transfer Roller	RF5-1534-000CN
3	Delivery Assembly	RG5-3474-020CN
4	Separation Guide Assembly	RG5-3475-020CN
	Lever Sensor Arm	RB1-7293-000CN
	Fuser Exit Roller Assembly	RF5-2368-000CN
5	Document Scanner Assembly	RG5-4223-000CN
	Pick-up Roller Assembly	RG5-4688-000CN
	Scanner Motor, AC 1.08 Watts	RH7-1376-000CN
	Contact Image Sensor Assembly	RG5-4239-000CN
	Cable, Contact Image Sensor	RG5-4233-000CN
6	Document Scanner Guide/Cover	RB2-3436-000CN
7	Paper Input Support*	RB2-3362-000CN
8	Paper Output Support*	RB2-3410-000CN
9	Document Feeder Support*	RB2-3455-000CN
10	Document Output Support*	RB2-3470-000CN
11	Strap*	HB1-2867-000CN
12	Upper Guide Assembly	RG5-4221-000CN
	Cover, Arm***	HB1-2895-000CN
	Sheet, Pad***	RB2-4114-000CN
	Document Scanner Separation Pad***	RB2-3430-000CN
13	Feed Assembly	RG5-3485-030CN
	Feed Roller	RB2-1699-000CN
14	Control Panel Assembly	RG5-4241-000CN

* These are customer-replaceable parts.

*** Replace these 3 parts as a set.

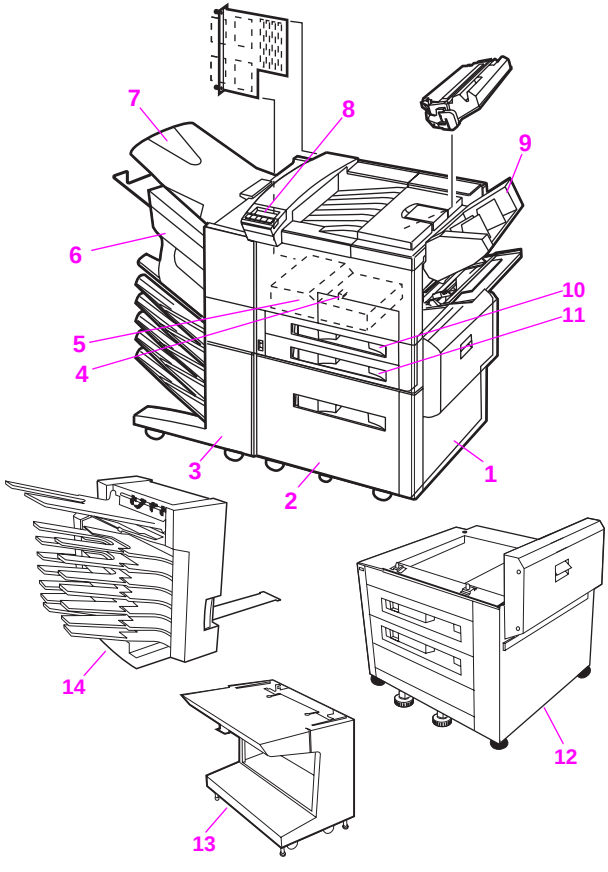
Parts for the HP LaserJet 3100



HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	LIU Board (U.S.) LIU Board (Worldwide)	C3948-67903 C3948-67904
2	ECU (Engine Controller Board) 110V ECU 220 V	RG5-4690-000CN RG5-4691-000CN
3	Laser Scanner Assembly	RG5-3494-050CN
4	Fixing/Fusing Assembly 110V Fixing/Fusing Assembly 220V	RG5-4678-000CN RG5-4681-000CN
5	Fixing Assembly Pressure Roller	RF5-2362-000CN
6	Formatter (without shield)	C3949-67901
7	Cable ECU to Formatter	RH2-5346-000CN
8	Fuser Exit Roller Assembly	RF5-2368-000CN
	Foot (4)	RF5-2663-000CN
	Speaker	RH6-3845-000CN
	Cable, Laser	RG5-2035-000CN
	Motor, D.C. 12V	RH7-1320-000CN
	RFI Shield, Formatter	C3948-00002

Parts for HP LaserJet 8000 series

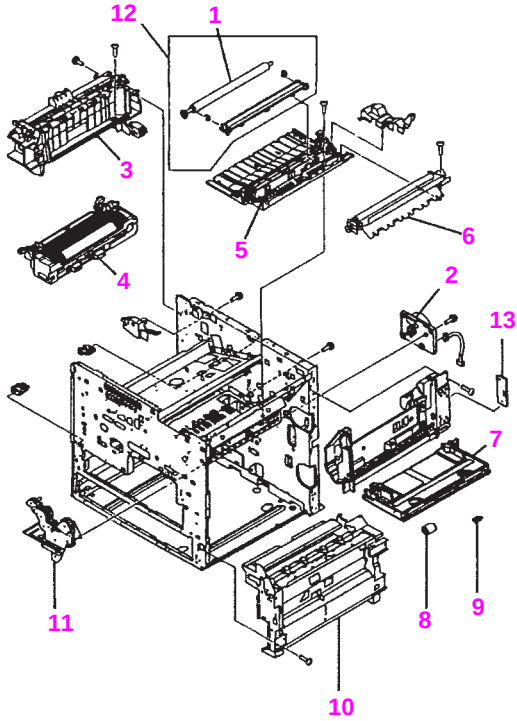


Major assembly locations (1 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	2000-sheet Input Unit Assembly	C4781A
2	Tray 4 Assembly	RG5-2155-000CN
3	Multi-Bin Mailbox	C4785B
4	Duplex Unit Roller 1	RB1-6822-000CN
5	Duplex Unit	C4782A
6	5-Bin Mailbox with Stapler	C4787A
7	Face-up Bin	RB1-6491-000CN
8	Control Panel Display	RG5-4384-000CN
9	Envelope Feeder	C3765B
10	Tray 2	RG5-3951-000CN
11	Tray 3	RG5-3952-000CN
12	Multiple Input Tray (2 x 500-sheet Input Tray)	C4780A
13	7-bin Stand	C4784A
14	7-bin Tabletop Mailbox	C4783A

Parts for HP LaserJet 8000 series

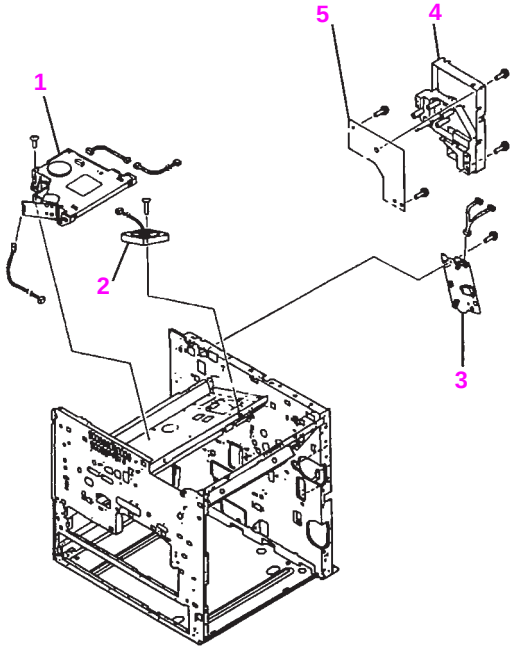


Major assembly locations (2 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Transfer Roller	RF5-1412-000CN
2	Main Motor	RH7-1260-000CN
3	Face-down Delivery Assembly	RG5-1874-000CN
4	Fusing Assembly 100V-120v	C3166-69012**
4	Fusing Assembly 220V-240v	C3166-69013**
5	Feeder Assembly	RG5-1834-000CN
6	Registration Assembly	RG5-1833-000CN
7	Tray 1 Pick-up Assembly	RG5-1880-100CN
8	Tray 1 Feed Roller	RB1-6730-000CN
9	Tray 1 Separation Pad	RF5-1455-000CN
10	Paper Input Unit (PIU)*	C3166-69011-000**
11	Main Gear Assembly	RG5-1847-000CN
12	Transfer Roller Assembly	RG5-1887-000CN
13	Tray 1 PCA	RG5-1884-000CN

**These parts require exchange.

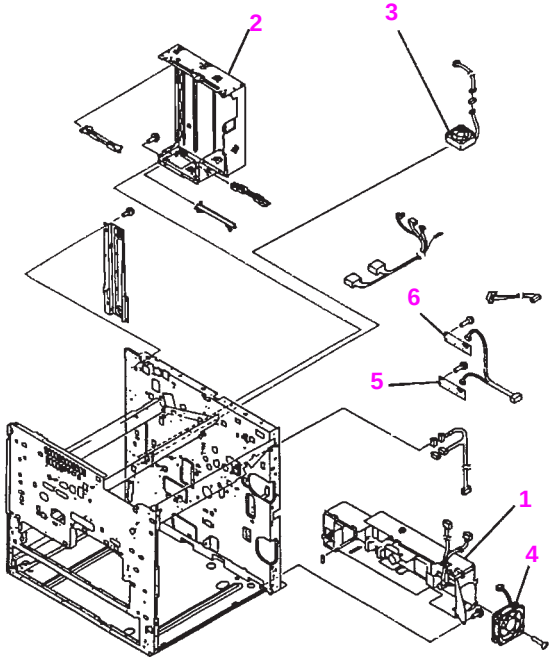


Major assembly locations (3 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Laser Scanner Assembly	C3166-69006**
2	Fan 1	RH7-1266-000CN
3	Switch/Sensor PCA	RG5-1846-000CN
4	High Voltage Power Supply*	C3166-69005**
5	DC Controller PCA*	C3166-69010**

**These parts require exchange.



Major assembly locations (4 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Low Voltage Power Supply, 110V-220V	C3166-69007**
1	Low Voltage Power Supply, Universal	C3166-69008**
2	Formatter	C4186-69001**
3	Fan 3	RH7-1271-000CN
4	Fan 2	RH7-1266-000CN
5&6	Paper Size Sensing PCA, Trays 2 and 3	RG5-1845-000CN

**These parts require exchange.

9 Image quality

Overview

This chapter provides examples of image defects and a list of remedies. Repetitive image defect rulers are supplied at the end of the chapter to use when measuring the approximate distances between repetitive image defects.

Cleaning page

For print-quality defects, try generating a cleaning page from the printer's control panel (4000, 5000, or 8000 series) or from the JetSuite Pro software (3100). The HP LaserJet Cleaning Utility works on all HP monochrome printers, regardless of driver type. Running the utility at regular intervals can extend the useful life of the fuser and reduce service procedures.

If your printer can not generate a cleaning page, you can download the HP LaserJet Cleaning Utility file and obtain instructions on its usage by accessing the worldwide web at www.hp.com/cposupport/eschome.html.

Note

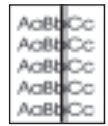
For the cleaning page to work properly, make sure to print the page on copier grade paper (not bond or rough paper).

Image Defect Table

For more information, see the page numbers below each image.



Background scatter (see page 142)



Black lines (see page 142)



Black pages (see page 143)



Blank page (see page 144)



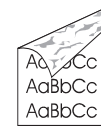
Blank spots (see page 145)



Bottom of page is blank or graphic image is cut off (see page 145)



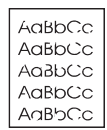
Character voids (see page 146)



Dirt on back of page (see page 146)



DIstorted image (see page 146)



Dropouts (see page 147)

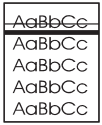


Faded print or bubbles (see page 147)

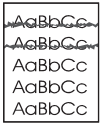


Gray background (see page 148)

9



Horizontal black lines or smears (see page 148)



Horizontal smudges (see page 148)



Horizontal white lines (see page 149)



Light print, dark print, faded print (see page 149)



Loose toner (see page 149)



Outgoing faxes/ copies/scanned images are too light or too dark (see page 150)



Print is faded or vertically aligned white streaks are apparent (see page 150)



Random black spots (see page 151)



Repetitive defects (see page 151)



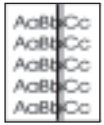
Scanned images have black dots or streaks in top and bottom margins (see page 151)



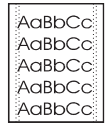
Scanned text is unclear (see page 152)



Toner Smear (see page 152)



Vertical black lines
(see page 152)



Vertical dots
(see page 153)



Vertical white lines
(see page 153)

Image defect details

Background scatter

- The media does not meet HP specifications.
- The toner cartridge is defective.
- Toner has spilled inside the product.
- The pickup roller is dirty.
- The print density setting is too low.
- The transfer roller is dirty or worn.

Black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fusing assembly is contaminated or damaged.
- The static eliminator teeth are contaminated or defective.

Black pages

- The high-voltage power supply connections are dirty.
- The high-voltage power supply is installed improperly. If the high-voltage power supply has been removed and replaced, it may not be seated properly.
- Check the ECU (engine controller unit) for damage.
- The toner cartridge is defective.
- Light is leaking into the printer.
  - Ensure all covers are in place.
- The primary charging roller is bad.
- The DC controller PCA is defective.
- The laser scanner assembly is faulty (turning laser on continuously).
- The connectors between the laser scanner unit and the DC controller PCA are not seated properly or are defective.
- There is a problem in the ECU or the laser scanner.

Blank pages

- No toner is available for print.
- The laser shutter is defective.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- No transfer roller voltage.
  - Check the ECU.
- No developing bias.
  - Check the ECU.
- Check the ground path.
- The laser scanner cable assembly is defective.
- There is a problem with the software's configuration.
- There is a problem with the network configuration. Some sharing devices on networks may generate a blank page as a separator.
  - Check with the network administrator.
- The printer may be feeding two or more pages at once because the paper is difficult to separate.
- The sealing tape has been left in the toner cartridge.
- The toner cartridge is empty or defective.
- The laser scanner door does not open properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner shutter door for proper operation.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- There is no transfer roller voltage.
  - Perform the Half Self-Test Functional Check to check all other electrophotographic processes.
  - Replace the transfer roller if necessary.
- The high-voltage connector springs are dirty or defective.

- The high-voltage connectors are mounted on the high-voltage power supply PCA and protrude into the toner cartridge cavity.
  - Check the springs for functionality. Clean if dirty; replace if defective or missing.
- The high-voltage power supply PCA is defective.
- The DC controller PCA is defective.
- There is no developing bias.
  - Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum.
  - Replace the ECU.
- There is no drum ground path.
  - Check the drum ground.
  - Replace the ECU.
- The laser scanner cable assembly is defective.
- The page length and margins are not set correctly for the paper size.
- Your software application is sending an extra page-eject command.
  - Check the software's printing configuration information.

Blank spots

- The paper does not meet HP paper specifications or is stored improperly.
- The toner cartridge is defective.
- The transfer roller is dirty or deformed.

Bottom of page is blank or graphic image is cut off

- The page is too complex. (There is not enough memory to process the page.)
  - Set the resolution to 300 dpi through the software or printer driver. See the online help for printer driver issues.

Character voids

- The surface of the paper is too rough or the paper's surface is too smooth for proper toner adhesion.
  - Use paper that meets HP paper specifications.
- Printing is on the wrong side of the paper.
- The transparencies are not designed for proper toner adhesion.
- The transfer roller is bad.
- The laser scanner assembly is bad.

Dirt on back

- Dirt is inside of the printer (tray separation roller, feed roller, fuser, toner cartridge).
- The paper does not meet HP paper specifications or is stored improperly.
- The pressure roller in the fuser is contaminated.

Distorted image

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet HP specifications.
- The output bin is incorrect for the paper type.
- The connection of the cables to the laser scanner is poor.
- The connection of the cables to the ECU is poor.
- The laser scanner is defective.
- The ECU is defective.

Dropouts

- The paper does not meet HP paper specifications.
- The printer's operating environment does not meet specifications.
- The toner density setting is wrong.
- A single sheet of paper is defective.
  - Try reprinting the job.
- The fuser setting was wrong for the paper type.*
- The DC controller PCA is defective.
- The high-voltage power supply PCA is defective.
- The transfer roller is defective.
- "Draft mode" or "economode" is selected in the software.

*This feature does not apply to all products.

Faded print or bubbles

- Check the ground path.
- Replace the ECU.
- The toner supply is low.
- The print density is set incorrectly.
  - Change to a darker setting and retry printing.
- If economode is on, turn it off.
- Try a different paper lot.
- Inspect the transfer roller for proper installation and contact.
  - Replace the transfer roller if it is damaged.
- The laser scanner door is not opening properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner door for proper operation.
- The high-voltage contact springs are dirty or defective.
- The DC controller PCA is defective.

Gray background

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet specifications.
- The toner density setting is wrong.
- The toner cartridge is faulty.
- The inside of the printer is dirty.
- The printer is printing on envelope seams.
  - Move the text to an area without seams.

Horizontal black lines or smears

- The laser scanner assembly or ECU is defective.
- The toner cartridge was improperly installed.
- The toner cartridge is defective.
- The printer needs to be cleaned.
- There is a problem in the heating element.
- A gear is damaged.

3100 only

- Horizontal lines appear in the margins and across entire pages of faxes that are being sent.
  - The HP LaserJet 3100 product needs to be cleaned.
  - There is a problem in the contact image sensor.

Horizontal smudges

- The paper path is contaminated or damaged.

Horizontal white lines

- The toner cartridge may be defective.
- The fusing assembly is dirty or defective.
- The laser scanner assembly or ECU may be faulty.
- There is dirt in the laser path.
- The mirror in the laser scanner is dirty.

Light print, dark print, faded print

- The toner density setting is wrong.
- The toner cartridge is low.
- The transfer roller is defective.
- The paper does not meet HP paper specifications or is stored improperly.
- Contact is poor to the ECU.
- The laser scanner is defective.
- The ECU is defective.
- The high-voltage power supply is defective.

Loose toner

- Dirt is in the printer.
- The toner cartridge is defective.
- Paper might be too smooth.
- The fuser setting for the paper type is wrong.
- The fuser is defective.

Outgoing faxes/copies/scanned images are too light or too dark

- The contrast is not set correctly.
- The original image is very light or very dark.
- The scanned image is too light or too dark because the original was on a colored paper.

3100 only

- Recalibrate the product.

Print is faded or vertically aligned white steaks are apparent

- The toner cartridge is getting low on toner.
- The paper you are using does not meet HP paper specifications.
- The toner density setting is not adjusted correctly.
- The internal mirror or optics are contaminated.
- The laser scanner is damaged.
- The document scanner needs to be recalibrated.
- There is a problem in the contact image sensor.
- There is a problem in the formatter.

3100 only

- The HP LaserJet 3100 product needs to be cleaned.
- The HP LaserJet 3100 product is damaged.

Random black spots

- The paper you are using does not meet HP paper specifications.
- You are printing on the wrong side of the paper.
- The printer requires cleaning with a cleaning page.
- The toner cartridge is damaged.

Repetitive defects

- Locate the defective roller in the printer.
- There is dirt on the roller or the roller is defective.
- The toner cartridge is damaged.
- The rollers are dirty.
- The fusing assembly is defective or dirty.
- The gears are worn, causing slippage or jumping.
- The paper does not meet HP paper specifications.

Scanned images have black dots or streaks in top and bottom margins

3100 Only

- There is ink, glue, white-out, or some other substance on the contact image sensor.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Scanned text is unclear

3100 Only

- The contrast, resolution, or brightness needs to be adjusted before scanning.
- The original is on colored paper.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Toner smear

- There is dirt on the paper.
- The fusing rollers are dirty.
- The paper does not meet HP specifications.
- The toner cartridge is defective.
- Wrong fuser setting for the paper type.
- The fusing assembly is defective.
- There is dirt in the printer.
- The static eliminator is dirty or is not grounded, allowing a static charge to remain on a page.
- The DC controller PCA is defective.

Vertical black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fuser entrance is dirty.
- The fuser has scratches on it.
- This may be a repetitive defect. If so, the lines will be repeated at a consistent interval down the page.
- The printer needs to be cleaned.
- There is a problem in the heating element.

3100 Only

- Scanned images have unwanted lines through them.
  - There is ink, glue, white-out, or some other substance on the contact image sensor.
  - Slick paper could be the problem; use a carrier sheet to send the item.
  - Recalibrate the product.

Vertical dots

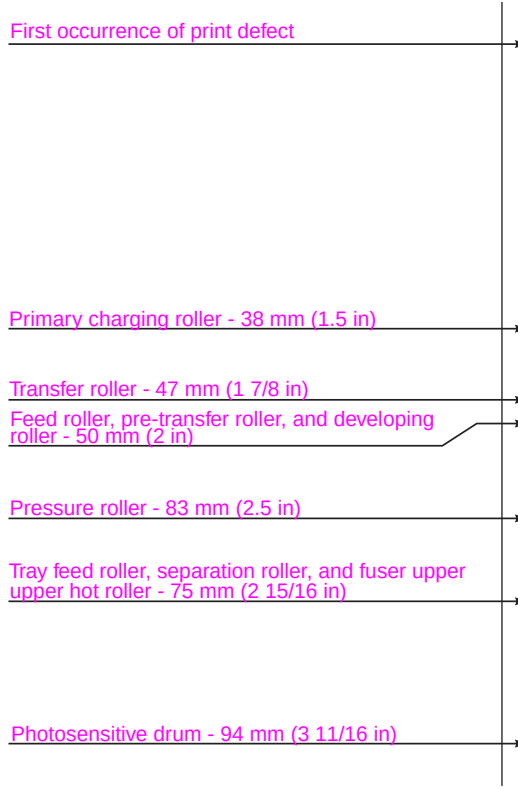
- The static eliminator teeth are dirty.
- There is poor contact between the static eliminator and the ECU.
- The transfer roller is deformed or it has deteriorated.
- The ECU is defective.

Vertical white lines

- There is a lack of toner or the toner cartridge is faulty.
- There is dirt in the laser path.
- The fuser is defective.
- A mirror in the laser scanner is dirty.

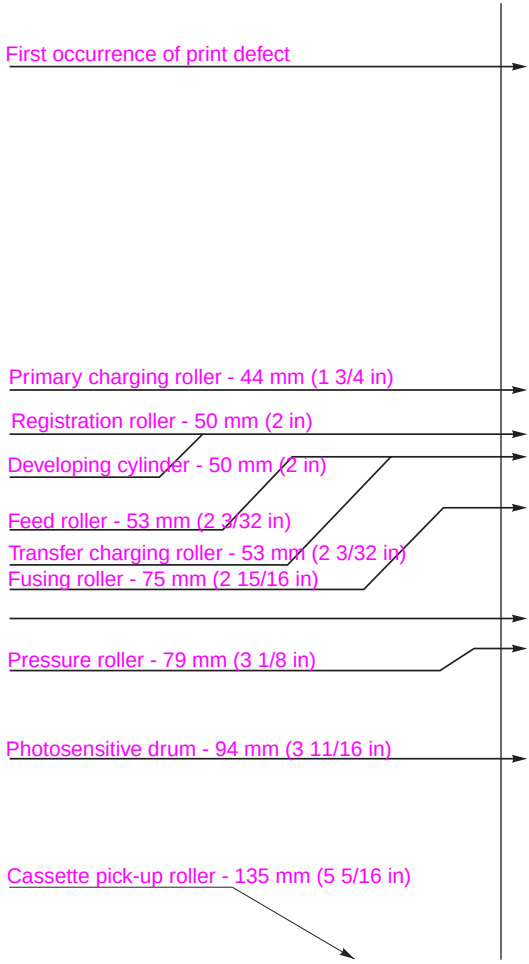
Notes

LJ 4000 series repetitive defect ruler


First occurrence of print defect
Primary charging roller - 38 mm (1.5 in)
Transfer roller - 47 mm (1 7/8 in)
Feed roller, pre-transfer roller, and developing roller - 50 mm (2 in)
Pressure roller - 83 mm (2.5 in)
Tray feed roller, separation roller, and fuser upper upper hot roller - 75 mm (2 15/16 in)
Photosensitive drum - 94 mm (3 11/16 in)

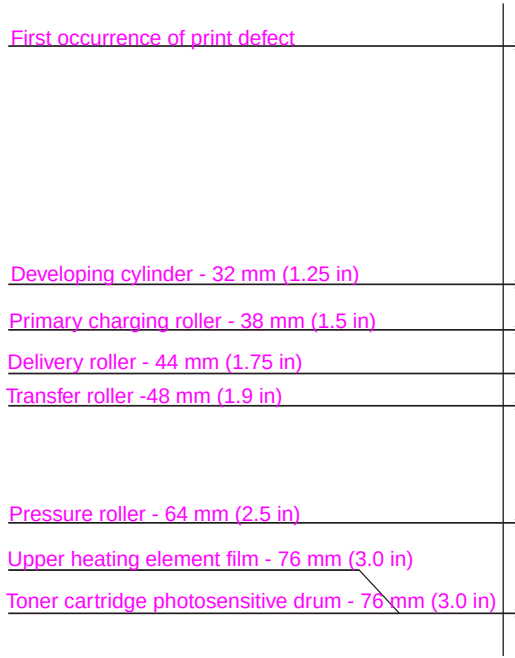
Notes

LJ 5000 series repetitive defect ruler


First occurrence of print defect
Primary charging roller - 44 mm (1 3/4 in)
Registration roller - 50 mm (2 in)
Developing cylinder - 50 mm (2 in)
Feed roller - 53 mm (2 3/32 in)
Transfer charging roller - 53 mm (2 3/32 in)
Fusing roller - 75 mm (2 15/16 in)
Pressure roller - 79 mm (3 1/8 in)
Photosensitive drum - 94 mm (3 11/16 in)
Cassette pick-up roller - 135 mm (5 5/16 in)

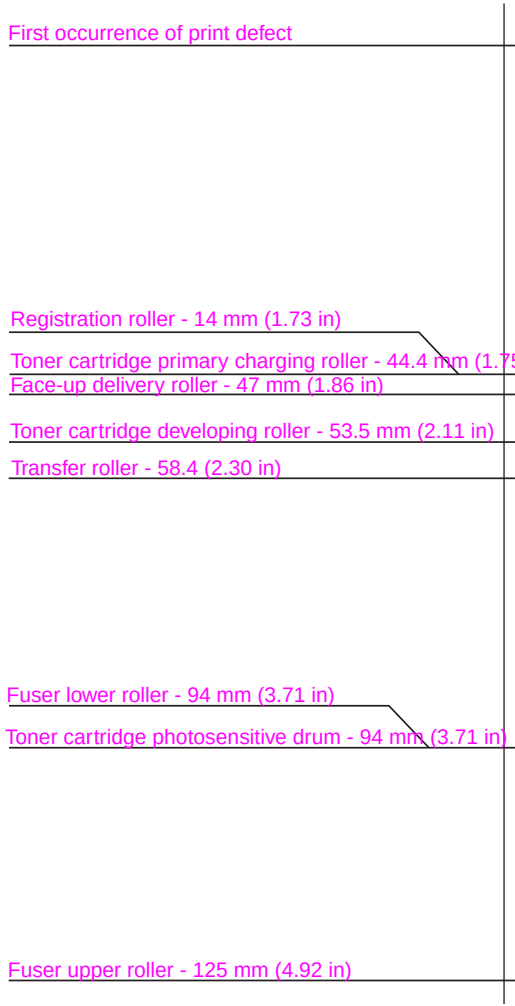
Notes

LJ 3100 repetitive defect ruler


First occurrence of print defect
Developing cylinder - 32 mm (1.25 in)
Primary charging roller - 38 mm (1.5 in)
Delivery roller - 44 mm (1.75 in)
Transfer roller -48 mm (1.9 in)
Pressure roller - 64 mm (2.5 in)
Upper heating element film - 76 mm (3.0 in)
Toner cartridge photosensitive drum - 76 mm (3.0 in)

Notes

8000 repetitive defect ruler


First occurrence of print defect
Registration roller - 14 mm (1.73 in)
Toner cartridge primary charging roller - 44.4 mm (1.75)
Face-up delivery roller - 47 mm (1.86 in)
Toner cartridge developing roller - 53.5 mm (2.11 in)
Transfer roller - 58.4 (2.30 in)
Fuser lower roller - 94 mm (3.71 in)
Toner cartridge photosensitive drum - 94 mm (3.71 in)
Fuser upper roller - 125 mm (4.92 in)

10 Wiring diagrams

Overview

This chapter provides wiring diagrams for printers supported in this guide.

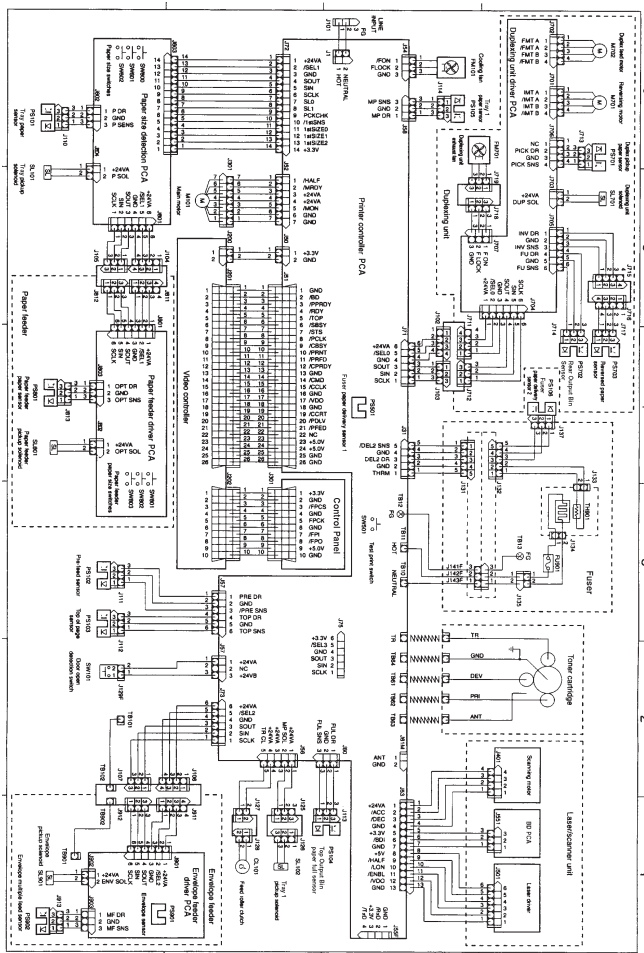


Figure 10-1 Wiring diagram (HP LaserJet 4000/4000 N)

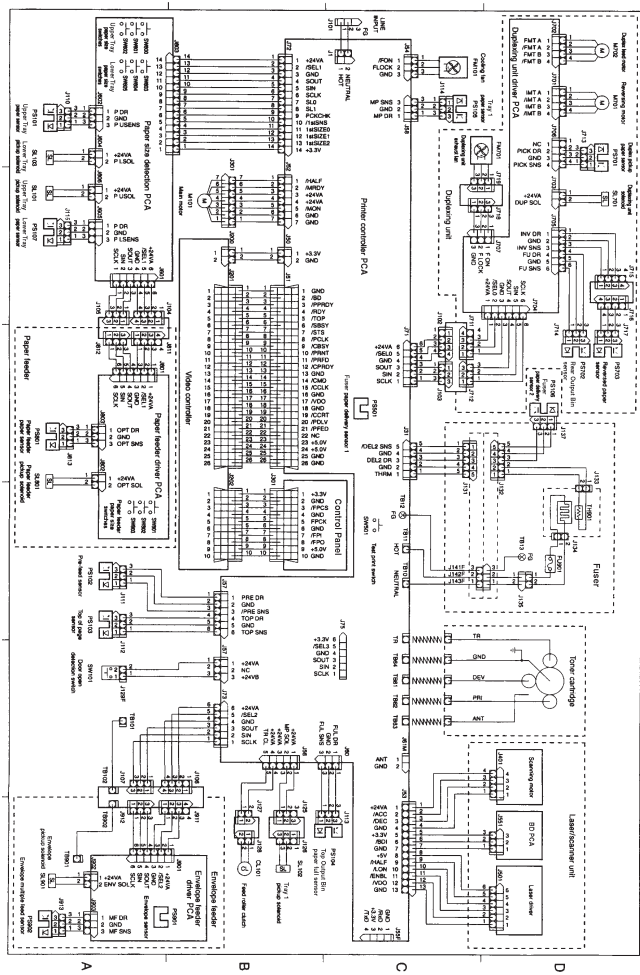


Figure 10-2 Wiring diagram (HP LaserJet 4000 T/4000 TN)

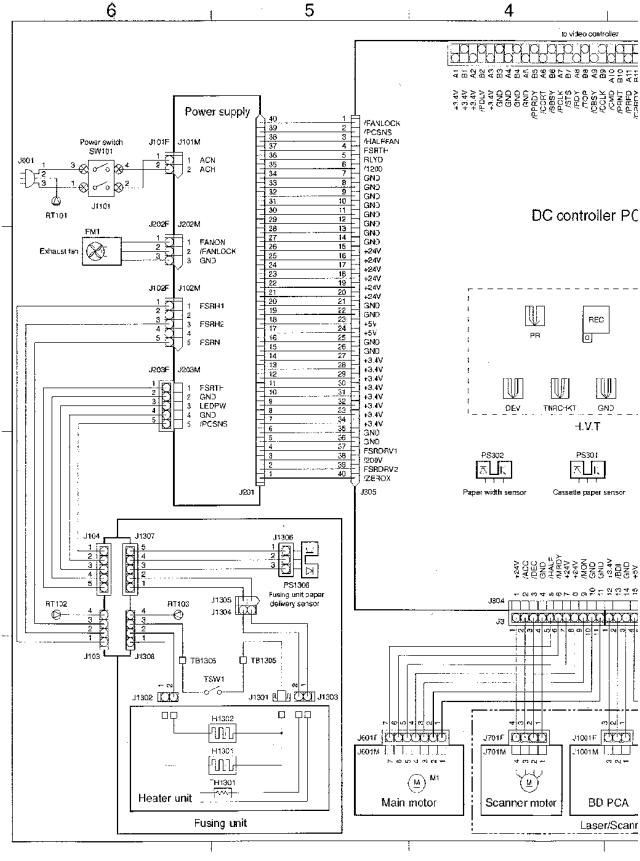


Figure 10-3 Wiring diagram (HP LaserJet 5000 series, 1 of 2)

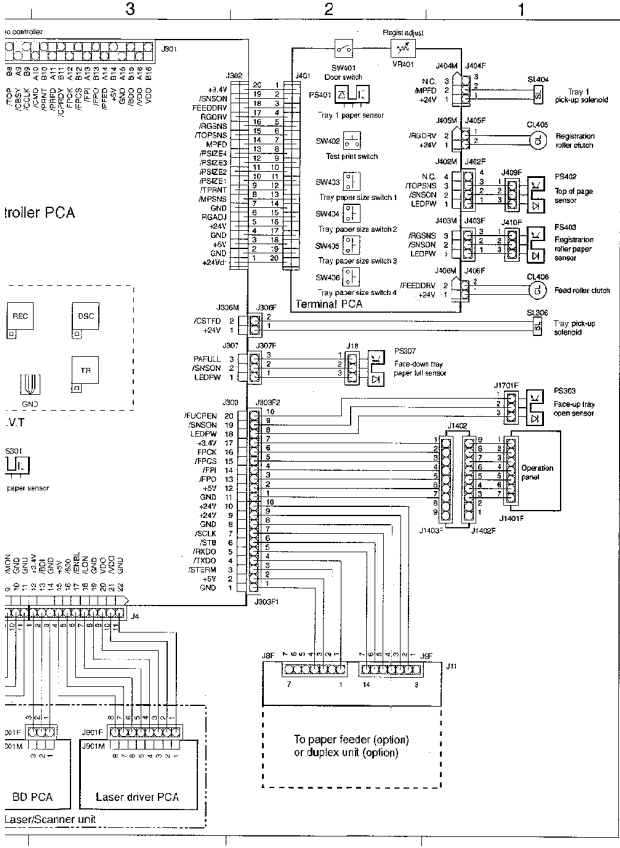


Figure 10-4 Wiring diagram (HP LaserJet 5000 series, 2 of 2)

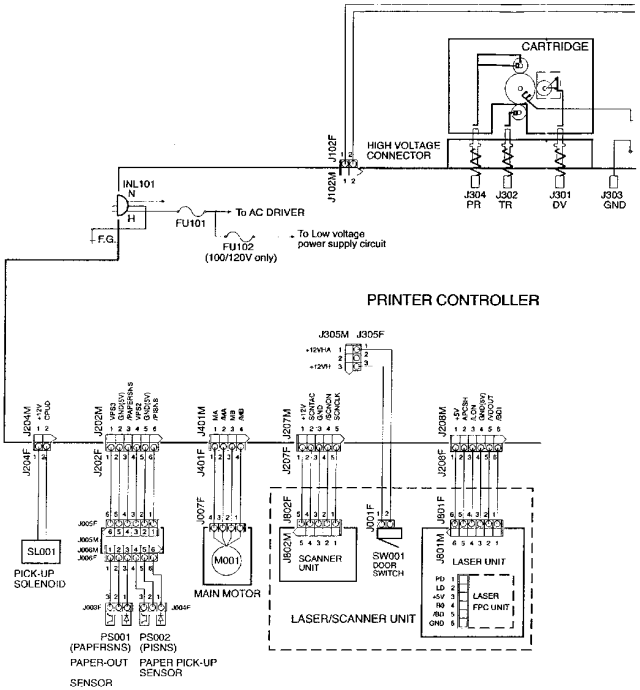


Figure 10-5 Wiring diagram (HP LaserJet 3100, 1 of 2)

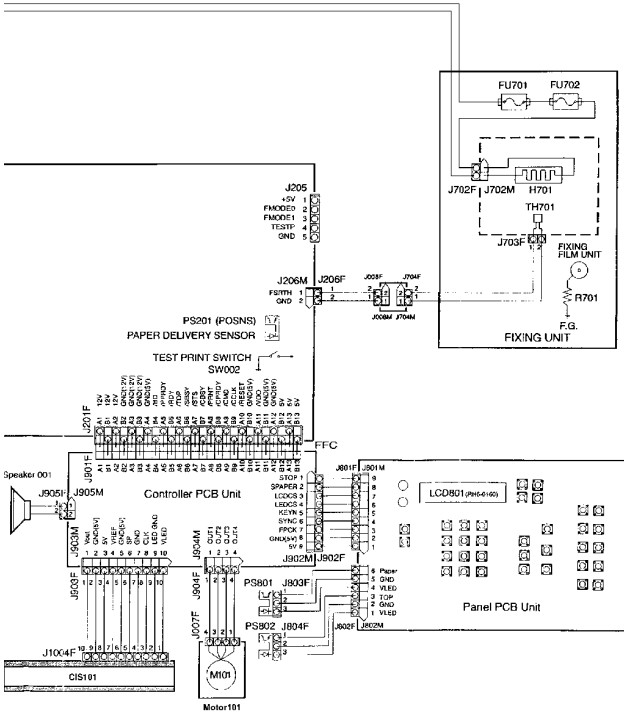


Figure 10-6 Wiring diagram (HP LaserJet 3100, 2 of 2)

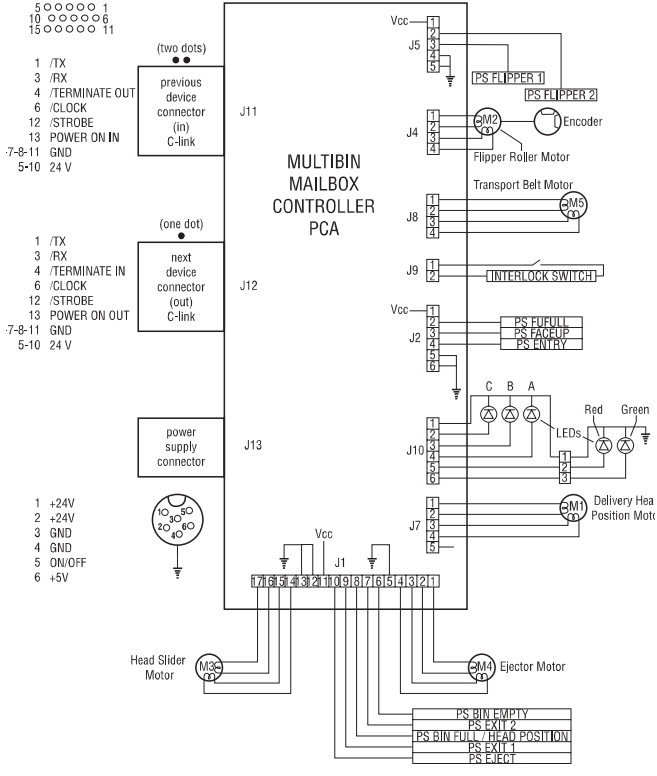


Figure 10-7 Wiring diagram (HP LaserJet 8000 series, 1 of 2)

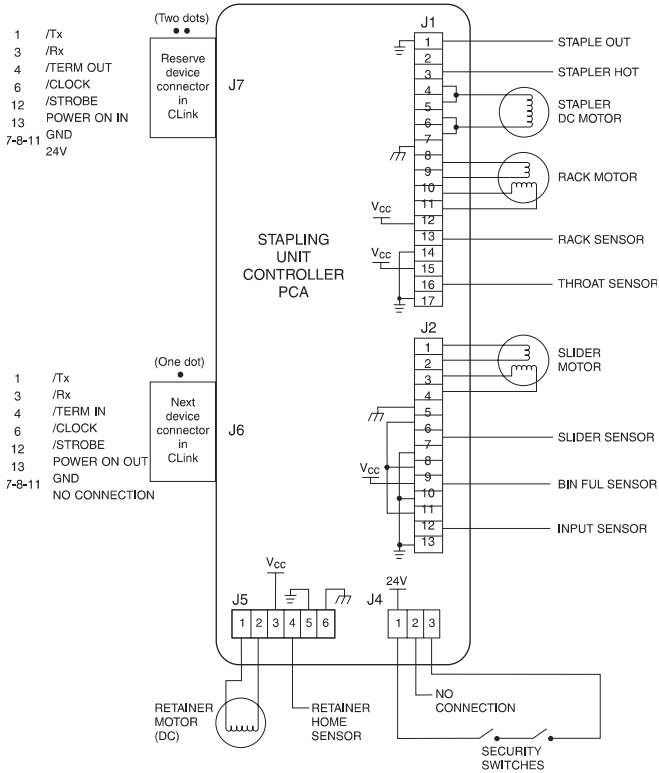


Figure 10-8 Wiring diagram (HP LaserJet 8000 series, 2 of 2)

11 Services and support/ resources and training

Overview

This chapter provides information on obtaining training, support, and materials.

How to get training

Lecture/lab training (U.S. only)

Service technicians who want individual, hands-on training can attend regularly scheduled lecture/lab training classes. These classes are offered throughout the country. To receive the latest schedule, call HP FIRST at (800) 333-1917, or see the HP website (www.hp.com/go/resellertraining) and request document ID number 9104. The latest schedule will immediately be sent to the fax number of your choice. Class schedule and registration information can also be obtained by calling the centralized registration center at (512) 434-1520.

Self-paced training kits

Product	Description	Part number
All LaserJet Printers	Basic Hardware Training Course (prerequisite for all LaserJet service training)	5961-0880
	Paper Training Video	5961-0711 (NTSC) 5961-0712 (PAL)
LJ 4000/4000 N/ 4000 T/4000 TN	Self-paced Training Kit NTSC Format PAL Format	 C4118-61101 C4118-61102
LJ 5000/5000 N/ 5000 GN	Self-paced Training Kit NTSC Format PAL Format	 C4110-61101 C4110-61102
LJ 3100	Self-paced Training Kit NTSC Format PAL Format	 C3948-61101 C3948-61102
LJ 8000/ LJ Mopier 240	Self-paced Training Kit NTSC Format PAL Format	 C4085-67901 C4085-67902

Support resources

North American Response Center (NARC)

The North American Response Center (NARC) is available for technical support to assist service technicians. The NARC can be reached at (800) 544-9976 (U.S.).

Other areas

Outside of North America and Europe, contact your local HP sales office for assistance in obtaining technical support.

HP FIRST fax system

HP FIRST (Fax Information Retrieval Support Technology) is a phone-in fax service that provides technical information to HP LaserJet users as well as to service personnel. Receiving a fax requires a group-3 facsimile machine or fax card. The following service-related information is available:

- service notes (HP-authorized dealers)
- application notes
- product data sheets
- material safety data sheets (MSDS)
- typeface and accessory information
- printer support software information
- toner information
- forms for requesting drivers and the software matrix

To retrieve service notes

(Authorized dealers, HP customer engineers (CEs) ONLY)

1. Dial (1) (800) 333-1917 (U.S.) from any touch-tone phone.
2. Select (1) for HP FIRST.
3. Select (3) for a password customer.
4. Enter the password: 737842.
5. Follow the voice prompts to enter a document ID number or to select the index.
6. Follow the voice prompts to enter your fax number or the fax number of your customer.

Note
Delivery time depends on the length and complexity of the document.

HP FIRST, U.S.

Call the HP ASAP system (800) 333-1917 (U.S.) and follow the voice prompts to enter HP FIRST.

HP FIRST, Europe

Call HP FIRST at one of the following numbers:

United Kingdom	(44) (134) 0800-960271
Netherlands	(31) (20) 0800-222420
Belgium (Dutch)	(32) (2) 0800-11906
Germany	(49) (13) 081-0061
Switzerland (German)	(41) (1) 0800-551527
Austria	(43) (1) 0660-8128

For English service outside the above countries, call:
(31) (20) 681-5792.

HP end-user support options

Local support assistance

The user's first source of assistance should be their local dealer or service center. HP continuously provides local computer dealers and service centers with the latest information regarding products and services. To locate the nearest authorized dealer or service center, phone (800) 243-9816 (U.S.) or (800) 387-3867 (Canada).

24-hour support information

Phone (800) 333-1917 to access the HP ASAP system for 24-hour automated support services. User support information includes notes for common software applications and troubleshooting tips. Users may request up to three documents per call.

Electronic information services

For 24-hour access to information via modem, we suggest:

- **CompuServe -** The CompuServe HP Peripherals forum (GO HPPER) provides printer drivers and interactive sharing of technical communication. To subscribe, call CompuServe, Inc. at (800) 524-3388. **Note**: CompuServe is not an official HP support channel, but the forum is maintained and supported by users.
- **Internet -** Printer drivers and product and support information can be obtained from the HP anonymous file transfer protocol (FTP) site 192.6.71.2 or ftp-boi.external.hp.com. The site is available to anyone with FTP access to the Internet. Access through the World Wide Web is available at URL http://www.hp.com/.

Printer drivers by mail

To obtain printer drivers, contact the software application manufacturer. HP distributes printer drivers for a few of the most popular applications. Call (970) 339-7009, 6 days a week, 24 hours a day (closed Sundays). Shipping and handling charges may apply on some printer drivers.

Telephone assistance – in warranty

Call (1) (208) 323-2551 Monday through Friday from 6 am to 10 pm, Saturday 9 am to 4 pm (Mountain Time) free of charge during the warranty period. However, your standard long-distance phone charges still apply. Have your system nearby and your serial number ready when calling.

Telephone assistance – post-warranty

Post-warranty telephone assistance is available to answer your product usage questions. Call (1) (900) 555-1500 ($2.50 per minute, U.S. only) or call 1-800-999-1148 ($25 per call, Visa or MasterCard, U.S. and Canada) Monday through Friday from 7 am to 6 pm and Saturday from 9 am to 3 pm (Mountain Time). *Charges begin only when you connect with a support technician. Prices subject to change.*

Hardware repair services

To find a local authorized repair center for hardware repair needs, call (800) 243-9816. HP also offers a variety of service contract options to complement the standard warranty. Call (800) 743-8308 (U.S.) or (800) 268-1221 (Canada).

12 Hewlett-Packard LaserJet Companion

Overview

This section provides information on the LaserJet 300 DPI page scanner, which is available in three models.

Hewlett-Packard LaserJet Companion

The HP LaserJet Companion includes the following models:

- C3989A Companion
- C3079A Companion SE
- C4106A Companion XI

(These are all the same product except for minor software differences.)

Description

The HP LaserJet Companion is a 300-DPI page scanner, parallel port pass-through accessory designed for Hewlett-Packard LaserJet 4000 series printers.

Warranty

The HP LaserJet Companion comes with a 1-year warranty, offering Central Repair only (no dealer repairs); Express Exchange (U.S. and Canada); and Repair and Return (Worldwide).

Supported media

- The following media sizes are supported:
  - Maximum: 216 mm x 762 mm (8.5 by 30 inch)
  - Minimum: 51 mm x 89 mm (2 by 3.5 inch)
- The following media weights are supported:
  - 60 to 105 g/m^2 (16 lb to 28 lb)

Skew specifications

Some skew is normal. The maximum amount of skew that is considered normal is 3.35 millimeters (0.13 inches) over 279 millimeters (11 inches). Skew exceeding the normal amount may be caused by media that is damaged, media that does not meet the specifications, or media that is loaded incorrectly.

If media meets specifications, is not damaged, and is correctly loaded, but skew remains excessive, clean the separation pad, pickup roller, and scan roller.

Cleaning

Clean these parts with isopropyl alcohol:

- separation pad
- pickup roller
- white scan roller

Clean the image sensor with glass cleaner.

Cables

Cable part numbers

HP part number	Part description
8120-6963	Cable shipped with the HP LaserJet Companion
C2950A	Printer parallel cable (IEEE-1284) 2 meters (7 feet)
C2951A	Printer parallel cable (IEEE-1284) 3 meters (10 feet)

Power supply modules

Output = 22VDC, + or - 25%

Power supply part numbers

HP part number	Part description
9100-5534	120 Vac 60 Hz (US/CN/MX)
9100-5535	230 Vac 50 Hz (EUROPE)
9100-5536	240 Vac 50 Hz (U.K.)
9100-5537	220 Vac 50 Hz (ARG)
9100-5539	240 Vac 50 Hz (AUSTRL)
9100-5541	220 Vac 50 Hz (TI/INDO)
9100-5542	220 Vac 50 Hz (HNG KNG)

A Acronyms and abbreviations

Acronyms and abbreviations

AC	Alternating current
AUTOCONT	Automatic continue
BNC	A 10-Base 2 connector used with coaxial cables
CE	Customer engineer
CFG	Configuration on control panel
DC	Direct current
DCPS	Direct current power supply
MS-DOS	Disk operating system
DPI	Dots per inch
DTR	Data terminal ready
DTR LINE	Data terminal ready line
ECU	Engine control unit
EP	Electro-photographic
EPH	External paper handling
FRU	Field replacement unit
FTP	File transfer protocol
HP ASAP	Hewlett-Packard Automated Support Access Program
HP FIRST	Hewlett-Packard Fax information retrieval support technology

Acronyms and abbreviations (continued)

HP-GL/2	Hewlett-Packard graphics language
HTML	Hypertext markup language
HV	High voltage
HVPS	High-voltage power supply
I/O	Input/output
IR	Infrared
IrDA	Infrared Data Association
IRQ	Interrupt request
JEIDA	A type of memory module
JOBID	Print job identification
JP	Jobpack
LAN	Local area network
LED	Light-emitting diode
LVPS	Low-voltage power supply
LC PICKUP ROLLER	Lower-cassette pickup roller
MB	Megabyte
MEM	Memory
MIO	Modular input/output
MP PICKUP ROLLER	Multipurpose tray pickup roller
MP Tray	Multipurpose tray
MSDS	Material safety data sheets
NARC	North American Response Center
NTSC	National Television Standard Committee
NVRAM	Nonvolatile random-access memory
Ohm	A unit of measure of electrical resistance
PAL	Phase alternation line format
PCA	Printed-circuit assembly

Acronyms and abbreviations (continued)

PCB	Printed circuit board
PCL	Printer command language
PC PICKUP ROLLER	Paper-cassette pickup roller
PIU	Paper input unit
PJL	Printer job language
RAM	Random-access memory
RIP	Raster image process
ROM	Read-only memory
SIMM	Single inline memory module
SMO	Support materials organization
SMODE	Service mode
SPEC	Specifications
SRVR	Server
TCP/IP	Transmission control protocol/Internet protocol
TS I/T52	Thermoswitch
UNIX®	Network operating system using TCP/IP protocol
URL	Universal resource locator
VDC	Volts direct current

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Service Websites

Electronic Support Center

Software, drivers, support documentation, frequently asked questions

http://www.hp.com/go/support

HP Technical Training (North America)

Classes and schedules

http://www.hp.com/go/resellertraining

Parts

Parts information

http://outfield.external.hp.com/spi/welcome.htm

Service Phone Numbers

All numbers listed are for North America only.

Dealer Response Line
Dealer pre/post sales and service support
(800) 544-9976 *U.S. Only* **(800) 363-6594** *Canada*

Customer Care Center
User questions, applications, LaserJet Fax
(208) 323-2551

HP First Fax – Information Retrieval System
Service notes, sales information, user help, software information
(208) 344-4809 **(800) 333-1917** *U.S. Only*

Customer Information Center
Sales dealer locations, literature, and specifications
(800) 752-0900 *U.S. Only*

HP Driver Distribution Center
Printer drivers and software application notes orders
(970) 339-7009 *U.S. Only*

Customer Support Sales Center
Authorized repair locations
(800) 243-9816 *U.S. Only*

Parts Direct Ordering / SMO
Service parts, supplies, and accessories orders
(800) 227-8164 *U.S. Only*

Parts Identification
Service part number identification
(916) 783-0804

North American Response Center
Online technical assistance
(800) 477-5526 *HP Only*

Corvallis Customer Service Center
Express exchange/customer return services
(916) 785-1200

Supported Products

HP LaserJet 4000/4000T/4000N/4000TN printer
HP LaserJet Companion 3989A
HP LaserJet 5000/5000N/5000GN printer
HP LaserJet 3100 multifunction printer
HP LaserJet 8000/8000N/8000DN printer
HP LaserJet 240 Mopier



Printed on at least 50% Total Recycled Fiber with at least 10% Post-Consumer Paper

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Supported Products

HP LaserJet Companion (minimal support only)
HP LaserJet 6L
HP LaserJet 5Si Mopier
HP LaserJet 5Si/5Si MX
HPLaserJet 5L
HP LaserJet 6P/6MP
HP LaserJet 5P/5MP
HP LaserJet 5/5M/5N
HP LaserJet 4V/4MV
HP LaserJet 4P/4MP
HP LaserJet 4L/4ML
HP LaserJet 4+/4M+
HP LaserJet 4/4M
HP LaserJet 4Si/4Si MX
HP LaserJet IIISi
HP LaserJet IIIP
HP LaserJet IIP+
HP LaserJet IIP
HP LaserJet IIID
HP LaserJet III
HP LaserJet IID
HP LaserJet II
HP Classic LaserJet (2686D)
HP Classic LaserJet (2686A)

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May 1998 Edition

HP LaserJet Family Quick Reference Service Guide

Volume II

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Volume II

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11311 Chinden Boulevard
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Ordering other manuals

The HP LaserJet Quick Reference Service Guide, Volume II*,* provides support for newer monochrome printers (see the following page for a complete list of supported printers). It has been created to help the HP LaserJet service engineer quickly troubleshoot common printer problems.

For older monochrome printers, see the *HP LaserJet Quick Reference Service Guide,* Volume I. It provides support for the following printers: LJ 6L, LJ 5Si Mopier, LJ 5Si, LJ 5Si MX, LJ 5L, LJ 6P, LJ 6MP, LJ 5P, LJ 5MP, LJ 5, LJ 5M, LJ 5N, LJ 4V, LJ 4MV, LJ 4P, LJ 4MP, LJ 4L, LJ 4ML, LJ 4+, LJ 4M+, LJ4, LJ 4M, LJ 4Si, LJ 4Si MX, LJ IIISi, LJ IIIP, LJ IIP+, LJ IIP, LJ IIID, LJ III, LJ IID, LJ II, LJ 2686D, LJ 2686A.

While the quick reference guides are intended to provide all the information the service engineer will need for on-site repair of HP products, they are not intended to replace the service manual for any HP LaserJet product. For detailed information about the HP LaserJet products described in this guide, see the user guide or service manual for that product.

Service manuals for HP LaserJet products are available from Hewlett-Packard. The phone number for the Service Parts Order Desk is:

(800) 227-8164 (U.S. only)

If you are located outside of the U.S., contact your local HP Sales and Service office.

Supported products

Reference name used in this guide	Model number	Maximum pages per month	Service Manual part number
LJ 4000/4000T 4000N/4000TN	C4118A/C4119A/ C4120A/C4121A	65K	C4118-99024
LJ Companion	LJ C3989A/ C3979A/C4106A	N/A	HP Central Repair Only
LJ 5000/5000N/ 5000GN	C4110A/C4111A/ C4112A	65K	C4110-91033
LJ 3100	C3948A	6K	C3948-90958
LJ8000/8000N/ 8000DN	C4085A/C4086A/ C4087A	130K	C4085-91017
LJ Mopier 240	C4228A	130K	C4085-91017

Note

This guide will be updated on a regular basis as the service needs change, as new products are introduced, and as information becomes available.

1 Control panel messages

Overview

This chapter provides a list of printer control panel messages. Alphabetical messages are listed first, followed by numerical messages. Control panel messages that are self-explanatory are not included. If you need more detailed information, see the service manual for the printer.

Alphabetical messages

(number) is a group, group not allowed

- Enter a different one-touch key or an unassigned speed-dial code.

Access denied, menus locked

- Ask the network administrator to unlock the function.

Already in group

- While programming a group-dial code, a fax number has been added that is already in the group.
  - Add the next fax number to the group.

Bad duplexer connection

- Re-install the duplexer.
- If the message persists, make sure that the duplexer is connected and that the connector is not damaged.
- Replace the duplexer.

Bad opt tray connection

- Re-install the optional tray.
- Make sure that the optional tray is connected and that the connector is not damaged.
- Replace the optional tray.

Blacklisted (France only)

- The attempted fax number has received a voice answer or no answer, was busy on the first dial and redials, or was busy with redials pending.
  - Unplug the power cord for the fax machine from the power strip or outlet, and then plug it back in.

Busy

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

Cancel group edit, ENTER to confirm

- Back space was pressed while in a group-dial code in the Group Dial Setup level of the menu.

1. Press **Start** to return to the group-dial code and continue editing.
2. Press **Enter/Menu** to go to the Group Dial Setup level of the menu. (Press **Enter/Menu** again to choose a different group-dial code.)
3. Press **Stop/Clear** to exit the Menu settings.

Check finisher device alternates with Clear jam

- Check to see if paper is jammed in the external paper-handling finishing device.

Check finisher device alternates with Finisher align error

- Check to see if an alignment error has occurred in the external paper-handling finishing device.

Check input device alternates with Paper path open, please close it

- Check the doors and trays.
- Check the tabs and sensor levers in the tray for proper operation.
  - Replace any defective tabs or sensors.
- Replace the printed-circuit assembly (PCA) controller in the feeder.

Check output device alternates with Close output delivery path

- Make sure the paper path is closed between the printer and the external paper-handling output device.

Chosen language not available

1. Print the job using a driver for a different printer language, or add the requested language to the printer (if available).
2. Press **Go** to continue.

Clear document from scanner

- Check to see if the document is jammed or if multiple sheets of the document were loaded.
- Check the special media lever. It should be to the left for regular-weight items or to the right for thick items. Thick items must be fed one at a time.
- Check the control panel configuration for outgoing faxes, including the “send long pages” setting.

Close top cover

- Check SW101 for proper operation. Verify that the wires are connected.
- If necessary, replace SW101.
  - If the new switch does not solve the error, the wiring or the engine controller board may be defective.

Communication error

1. Try resending the fax.
2. If the call fails again, check that the telephone cord is securely connected. Then check for a dial tone on the phone line by pressing **Manual Dial**.
3. Wait; try resending the fax later.

Note

For additional details, see the *HP LaserJet 3100 Product Service Manual*.

Configuration err # (number 1-4)

- An error was detected in the static random-access memory (SRAM).
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. stuck addr

- In Service mode only, SRAM stuck address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. tied addr.

- In Service mode only, SRAM tied address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

[Date] [Time]

- The battery has failed. You can continue to use the HP LaserJet 3100 product without replacing the battery, but if you re-enter the Menu settings and then turn off the power, the settings are erased again.

Decoding error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Disk device failure

- Reseat the enhanced input/output (EIO) disk or replace the old disk device with a new disk.

Disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Disk file system is full

- Delete the files from the EIO disk and then try again, or add a Flash dual inline memory module (DIMM).
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Disk is write protected

- Use the HP JetAdmin software to disable the write protection.

Documents were lost, START to continue

1. Press **Start**. A report is printed.
2. Check the fax log status column for the “Fax Document was Lost” message.
3. Resend the associated outgoing faxes. Ask the sender to resend incoming faxes.

Duplex error, check duplexer

- Check the duplexer for a paper jam.
- Reseat the duplex assembly, and check the connection.
- Replace the Duplex unit.

EIO x disk initializing

- Stand by until the EIO disk is done initializing.

EIO x disk spinning up

- Stand by until the disk accessory card is done initializing.

EIO disk x non-functional

- Replace the EIO disk.

Encoding error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Envelope feeder load

1 Load the requested envelope type and size into the envelope feeder.

2 Make sure that the envelope size and type are set correctly on the Paper-Handling menu in the printer control panel.

3 Press **Go** if the envelope is already loaded in the feeder.

4 Press **-Value+** to scroll through the available types and sizes.

Errors likely in pages: (page range)

- Resend the fax or ask the sender to resend the fax to you.

Fax document was lost

- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes were lost. Then re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.

Fax memory error # (number 1-5)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes may have been lost. Then, re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.
- If the error persists, replace the formatter.

Flash device failure

- Remove the Flash DIMM and replace it with a new one.

Flash file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Flash file system is full

- Delete files from the Flash DIMM or add another DIMM.
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Flash is write protected

- Use the HP JetAdmin software to disable the write protection.

Group is empty, use ONE-TOUCH/SPEED DIAL

1 Begin adding fax numbers to the group-dial code by pressing the one-touch key for each number or by pressing **Speed Dial**.

2 Enter the speed-dial code for the fax number.

3 Press **Enter/Menu**.

Initializing

- Reseat the DIMM(s).

Input device condition xx.yy

1st x = Device number in chain.

2nd x = Device type (3 types):

1 = Input
2 = Output
3 = Stapler/stacker unit

yy = Device specific error.

- See the documentation that came with the paper-handling device.

Input limit reached

- The maximum number of fax numbers that can be added to an ad-hoc group is 100. Resend the fax, but only to 100 or fewer fax numbers.

Install front duplex cover

- Re-insert the duplexer's front cover.

Install tray x

- Re-insert the specified tray.
- Check for damaged tabs in the tray.
- Check for damaged switches in the printer.
- Replace the PCA controller in the feeder.

Invalid date or time

- Re-enter the date and time.

Keypad test failed

- Run the keypad test again.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the control panel.
  - Replace the formatter.

Loading program <number> alternates with Do not power off

- Wait for the program to load.

Long page? START to continue

- Press **Start** to continue scanning. If **Start** is not pressed within 3 seconds, the message disappears and the document scanner stops scanning because it thinks the page has jammed.
- If sending a fax or copying a document longer than 991 mm (39 in), the control panel configuration can also be set to “Send long pages.” This ensures that long pages feed without having to monitor the task. Press **Start** before the document scanner shuts off.

Manually feed [type] [size]

1. Load the requested paper into Tray 1.
2. Press **Go** if the appropriate paper is already loaded in Tray 1.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.

Memory full - send unscanned pages

- Reload the unscanned pages and re-send them to finish the fax job.
- Scan the unscanned pages to the computer and fax them from the computer.

Memory full - stored data lost

- Add more memory to the printer or simplify the print job.

Memory is full

- This message should clear automatically when the next task starts (for example, when you start a copy or receive a fax).

Memory settings changed

- Try changing the memory settings for I/O Buffering and Resource Saving (although default settings are usually best).
- Install additional memory in the printer.

Memory shortage job cleared

- Press **Go** to continue.
- On the printer control panel, change the setting for resource saving, or add more memory to the printer.

Memory shortage page simplified

- Press **Go** to continue.
- Add more memory to the printer.

Modem error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the LIU.
  - Replace the formatter.

No answer

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No dial tone

- Check that the telephone cord is securely connected.
- Check for a dial tone on the phone line by pressing **Manual Dial**.
- If necessary, check the wall outlet by plugging in a phone and attempting to place a call.

No fax in (number) tries

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No fax pages in memory to reprint

- Wait for a fax. As soon as a fax is in the memory, the fax will reprint.

No memory for report, erase/print document

- Print all faxes that have been received in memory.
- If you have several faxes set up to be sent at a future time or to be polled, use job status to clear them.

No modem installed

- There is a problem with the line interface unit (LIU).
  - Unplug the power cord from the power source, wait 10 seconds, and replug in the power cord.
- If the problem persists, replace the LIU.
- If the problem persists, replace the formatter.

No room in fax log

- The fax log was unable to print because of an error, such as out-of-paper.
  - Load paper in the paper input bin so the HP LaserJet 3100 product can print the log.

Not enough memory

- Try resending the job. If the error persists, try reducing the amount of activity on the HP LaserJet product. Cancel jobs in memory before resending the job.

Out of memory -- switching to ONE COPY

- The HP LaserJet product continues to copy, but only one copy is output.
  - Divide the copy job into smaller sections and then try copying again.
  - If you are collating the job, turn the collation feature off, make only one copy of the document at a time, or see the user guide for instructions about using the Document Assistant.

Output bin full alternates with Clear paper from [bin name]

1. Remove the media from the face-down tray.
2. Check PS1401 on the sensor PCA.
3. Make sure the sensor flag moves freely.

Paper bin is empty, please add paper

1 Load paper.

2 If paper is already loaded, remove it.

3 Check for, remove, and discard any jammed sheets.

4 Reload the paper.

Password must be 4 digits

- Re-enter a four-digit password.

Paused (memory full)

- Reduce activity on the HP LaserJet product, or wait for other jobs to finish so memory will be freed.
- If faxes are set up to be polled or sent at a future time, you may want to cancel these jobs to free memory.

Perform printer maintenance

Reset the maintenance page count only after a maintenance kit has been installed. Resetting the maintenance page count causes `PERFORM PRINTER MAINTENANCE` to appear after another 150,000 (LJ 5000 series), 200,000 (LJ 4000 series), or 350,000 (LJ 8000) pages have printed.

1 Hold down the **Item-** and **Value-** keys.

2 Turn the printer on.

3 Wait until `RESET MAINTENANCE COUNT` appears, and then release both keys.

PC print timed out

- Let the “print jobs retry” continue for 5 minutes. If the HP LaserJet 3100 product still does not print, resend the print job.

Phone number error

- The maximum number of characters that can be entered is 40. If you have a number longer than 40 characters, break the number into smaller chunks.

1 Enter the first part of the number, and press **Redial/Pause** as the last character in the first number.

2 Enter the second part of the number as if it were a second number going to a group. When the product dials, it will treat both numbers as if they are one.

Polling-in error

- Make sure that the sender's fax machine is ready to be polled, and check the fax number. Then set up to poll again.

Printer comm error^1

- Check that the parallel cable is securely connected between the HP LaserJet 3100 product and the computer.
- If the problem persists, unplug the power cord from the power source for 5 seconds, and then replug it.
- If the problems persists, replace the formatter.

Printer cover open or no cartridge

- Verify that the printer door is closed.
- Check the toner cartridge for proper installation.

Printer fixing error, replace fixing unit

- There is an error with the print engine.
- Check the cabling to the heating element.
- If the problem persists, replace the heating element.
- If the problem persists, replace the ECU.

Printer is busy

- No action is needed. If you already started another job, the job will be completed when the HP LaserJet product becomes available.

Printer laser error, call for service

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Printer motor error, call for service

- A problem has occurred with the print engine.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
  - If the problem persists, replace the motor.
  - If the problem persists, replace the ECU.

Printer paper jam, check paper path

- Check the input areas, the output areas, and the interior for the jam, and then clear the jam. The job should continue to print. If it does not, try reprinting the job.

Printer signal error

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Processing job from Tray x

- Check the tray selected and the type settings. If the printer does not respond after you press the control panel keys, turn the printer off, and then turn the printer on to clear the message.
- If paper is loaded when the printer is in Power Save mode, it might not be recognized. Open and close the affected source when the printer is in Ready mode.

RAM disk device failure

- Turn the printer off and on to clear the message.
- If the message persists, install a new RAM disk.

RAM disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

RAM disk file system is full

- Delete files and then try again, or turn the printer off and then turn the printer on to delete all files on the device. (Use HP JetAdmin software, HP FontSmart software, or another software utility to delete files.)
- If the message persists, increase the size of the RAM disk.
  - Change the RAM disk size from the Configuration menu in the printer control panel.

RAM disk is write protected

- Use HP JetAdmin software to disable the write protection.

Received error

- Ask the sender to resend the fax.

Redial failed

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on and working and to verify the fax number.

Remote fax was busy

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on is on and working and to verify the fax number.

Scan reference error

- Recalibrate the document scanner.
- If the problem persists, replace the CIS.

Scanner error #1

- An error has occurred within the SRAM.
- Press and hold down the **Stop/Clear** key for 7 seconds to reset the product.
- If the error persists, unplug the power cord from its power source for 10 seconds, and then replug it.
- If the error persists, replace the CIS.
- If the error persists, replace the formatter.

Scanner isn’t available

- The document scanner mechanism is in use.
  - Wait until the document scanner has finished the current job before sending the next job.

Scanner jam - reload

- Pull open the document release door and then remove the jammed document.

Speed dial (number) is not assigned

- Choose a speed-dial code that has already been assigned a fax number.

System error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the message is still displayed, replace the formatter.

There are no documents in memory

- No action is required. There are no faxes to retrieve.

Tray x empty

- Load the empty tray (X) to clear the message.
- Inspect the tray for damaged tabs.
- Check the sensor-arm flags for damage. Be sure the flags can move freely.
- Replace any defective sensors.

Tray x lifting

- Verify that the media can be pulled from another tray.
- Replace the paper input unit.

Tray x load

1. Load the requested paper into the specified tray (X). Ensure that the trays are correctly adjusted for size.
2. Press **Go** to print from the next available tray.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.
5. Inspect the switches in the tray.
6. Remove the tray, and then turn the printer on. Push the switches by hand to see if the switches register.

Unrecognized format

- When printing, the incorrect printer driver was selected or an error occurred on the parallel interface.

1 After selecting the Print command in the software application you are using, select the HP LaserJet 3100 as the printer.

2 Reprint the job.

Unsuccessful call

- Check the fax number and try resending the fax.
- If the message appears again, try sending to another fax machine or try again later.

Unsupported size in tray [yy]

- Load a supported paper size in the tray.

Use [type] [size] instead?

1 Press **-Value+** to scroll through the available types and sizes.

2 Press **Select** to accept the alternate type or size.

Numerical messages

XX.YY printer error, press GO to continue

Press **Go** on the printer control panel to clear the error message.

13 Paper jam

- Remove the jammed paper from the specified location. Check the entire paper path for other pieces of paper.
- Open and close the top cover to clear the message.
- Check sensors and flags in the paper path for proper operation.

13.1 Paper delay jam at paper feed area
13.2 Paper stopped jam at paper feed area

- Ensure that the paper trays are loaded properly so that paper can feed from the trays.
- Check the input area for obstructions such as paper in the paper path or damage to the registration assembly.
- Verify that the transfer roller is positioned correctly.
- Check PS 102 and PS 103 (4000 series) and PS 402 and PS 403 (5000 series) for proper operation.
  - Replace any defective sensors or flags.

13.5 Paper delay jam at fuser
13.6 Paper stopped jam at fuser

- Check the transfer roller and small media belt to ensure that the roller and belt are operating and can feed the paper.
- Check the paper path for obstructions at the transfer roller, toner cartridge, paper feed guide, and fuser.
- Check PS 501 and PS 106 (4000 series), PS 1307 (5000 series), or PS 1403 (8000 series) for proper operation. Replace any defective sensors or flags.

13.9 Check left door

- Inspect the path between the fuser and delivery assemblies.
- Check the diverter assembly.

13.10 Paper delay jam at paper reversing area/ duplexer

- Check the duplexer and the rear area of the printer for obstructions or damage.
- In the duplexer, check PS 701 and PS 703 for proper operation.
- Replace the duplexer if a sensor is defective.

13.11 Paper jam

- Check the entire paper path.
- Reseat the duplexer.
- Try the Paper Path Test.
- Replace the duplexer.

13.11 Paper jam in input device

1 Open the vertical transfer unit (VTU) and remove the media.

2 Verify that the entry or exit sensor can move freely.

3 If the problem persists, open the VTU and override its Open Door sensor, perform a Paper Path test from the 2,000-sheet Input Tray (or 2x500-sheet Input Tray), and make sure the feed rollers are advancing the paper.

- If the rollers do not rotate, verify the connections at the main drive assembly, pickup assembly, controller PCA, and power supply. If the rollers still do not rotate or do not drop down, replace the pickup assembly.
- If the rollers rotate and drop down without advancing the paper, replace the feed rollers using the maintenance kit.
- If the problem persists, replace the VTU.

13.12 Paper jam

- Check the paper path between the fuser and duplex assembly.
- Reseat the duplexer.
- Replace the duplexer.

13.13 Paper jam

- Check the entire paper path.
- Remove the duplex assembly and look for paper in the side of the assembly.
  - Retest.
- Replace the duplexer.

13.20 Paper jam

- Check the paper path for obstructions.
- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.21 Door open jam

- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.22 Paper jam in output device

- Open the flipper jam access door and remove the media.
- Make sure the sensor flag moves freely.
- Make sure that the flipper shaft is in place.
- If the problem persists, replace the flipper assembly.
- If the problem persists, replace the mailbox controller PCA.

20 Insufficient memory alternates with Press GO to continue

- Press **Go** to print the transferred data (some data might be lost); then simplify the print job or install additional memory.

21 Page too complex

- Press **Go** to print the transferred data. (Some data could be lost).
- To print the job without losing data, select Page Protect=on from the Configuration menu in the printer control panel and then print the job. Afterward, return to Page Protect=auto. Do not leave Page Protect=on; doing so could degrade performance.
- If this message appears often, simplify the print job or install additional memory.

22 EIO x buffer overflow alternates with Press GO to continue (too much data sent to EIO card)

- Press **Go** to clear the message. (Data will be lost.)

22 Parallel I/O buffer overflow (too much data sent to parallel port)

- Check for a loose cable connection. Use a high-quality IEEE-1284 cable.
- Press **Go** to clear the error message. (Data will be lost.)

22 Serial I/O buffer overflow alternates with Press GO to continue (too much data sent to the serial port)

- Verify that the correct option for serial pacing is selected on the I/O menu.
- Print a Menu Map and verify that the serial pacing item (from the I/O Menu on the printer control panel) matches the setting on the computer.
- Press **Go** to clear the error message. (Data will be lost.)

40 Bad serial transmission (data transfer error)

- Verify cable connections.
- Verify that the printer serial configuration is set the same as the computer.
  - Access the serial baud rate setting from the I/O Menu on the printer control panel.
- Press **Go** to clear the error message and continue printing.

40 EIO x bad transmission (connection between printer and EIO card broken)

x = Description

1 = EIO slot 1

2 = EIO slot 2

- Turn the printer off and reseat the card.
- Press **Go** to clear the error message and continue printing.

41.3 Unexpected paper size

- Verify that all trays are adjusted correctly for size. (The printer attempts to print the job until size settings are correct.)
- If you are trying to print from Tray 1, make sure that the paper-size setting in the printer control panel is configured correctly.
- If you are trying to print from the optional 500-sheet tray, be sure to set the paper-size dial to match the paper size loaded in the tray.
- Press **Go**. The page containing the error is automatically reprinted. (Or, press **Cancel Job** to clear the job from the printer's memory.)

41.x Printer error alternates with Press GO to continue

- A temporary printing error occurred.

  x = Description

  1 = Unknown misprint error

  2 = Beam detect error

  4 = No VSYNC error

  5 = Media feed error

  9 = Noise VSREQ error

- Press **Go**. The page containing the error reprints automatically. If the error persists, try the following procedures:
  - Reseat the connections to the laser scanner and the engine controller board.
  - Replace the laser scanner.
  - Replace the engine controller board.

50.x Fuser error

x = Description

1 = Low fuser temperature

2 = Fuser warm-up service

3 = High fuser temperature

4 = Faulty fuser

5 = Inconsistent fuser

1 Turn the printer off, wait 20 minutes, and then turn the printer on.

2 If the message persists, reseat the fuser.

3 If the message persists, replace the fuser.

51.x Printer error (loss of beam detect)

x = Description

1 = Beam detect error

2 = Laser error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

52.x Printer error (the laser scanner speed is incorrect)

x = Description

1 = Scanner startup error

2 = Scanner rotation error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

53.xy.zz Printer memory error with an accessory

The DIMM that caused the error will not be used.

x = DIMM type

0 = read only memory (ROM)

1 = random access memory (RAM)

y = Device location

0 = Internal memory (ROM or RAM)

1 to 3 = DIMM slots 1, 2, or 3

zz = Error number

0 = Unsupported memory

1 = Unrecognized memory

2 = Unsupported memory size

3 = Failed RAM test

4 = Exceeded maximum RAM size

5 = Exceeded maximum ROM size

6 = Invalid DIMM speed

7 = DIMM reporting information incorrectly

8 = DIMM RAM parity error

9 = ROM needs to be mapped to an unsupported address

10 = DIMM address conflict

11 = PDC XROM out of bounds

12 = Unable to make a temporary mapping

- Turn the printer off, and reseat or replace the specified DIMM.
- Try the DIMM in another slot.
- Replace the DIMM that caused the error.

55 Printer error alternates with Press GO to continue (internal communications problem)

- Press **Go**. The page containing the error reprints automatically.
- Check the power at the site.
- Replace the formatter PCA.
- Replace the DC controller.
- Replace the engine controller board.

56.x Printer error alternates with Cycle Power to continue

x = Description

1 = Illegal input

2 = Illegal output

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and on.
- Check the printer's configuration.

57.x Printer Error

x = Description

4 = Printer fan

7 = Duplex fan

- Check the fan's connector and verify that the fan is not blocked.
- Replace the fan.

59.x Printer error

x = Description

0 = Motor error

1 = Motor startup error

2 = Motor rotation error

- Turn the printer off and then on.
- Make sure that the fuser or toner cartridge is not hindering gear movement in the drive train.
- Verify that the cable in the main motor is seated properly.
- If the error persists, replace the motor.

62.x Printer error (printer memory)

x = Location of problem

0 = Internal memory

1 to 3 = DIMM slots 1, 2, or 3

- Reseat or replace the specified DIMM.

64.x Printer error (scan buffer)

- Turn the printer off and then on.
- If the message persists, replace the formatter.

66 Error (external paper-handling device)

First x = Device number in chain

Second x = Device type (3 types):

1 = Input

2 = Output

3 = Stapler/stacker unit

yy = Device-specific error

- Press **Go** to clear the message.
- Turn the printer off and then on.
- Check all of the cables.
- Reseat the external paper-handling device.

66.11 Input device failure

- Verify that the lifting plate lifts up freely by hand.
- Verify that the paper size plates are installed correctly and are not bent.
- Check the pickup roller for proper installation.
- Check the pickup assembly and replace if necessary.
- Replace Tray 4.

66.xx.yy Input device failure alternates with Check cables and cycle power

- Check for an error in an external paper-handling device.

  1st x = Device number in chain

  2nd x = Device type (3 types):

  1 = Input

  2 = Output

  3 = Stapler/stacker unit

  yy = Device specific error
- Press **Go** to clear the message.
- Turn the printer off, and then turn the printer on.
- Reseat the external paper-handling device.

68 NVRAM full check settings

- Print a configuration page and check the printer settings to determine which values have changed.
- Hold down **Cancel Job** while turning the printer on.

69.x Printer error

x = Description

0 = The duplex mechanism has failed.

1 = The duplex side adjust has failed.

- Turn the printer off, and then turn the printer on.
- Reseat the duplexer.

79.xxxx Error (printing)

The printer detected an error. The numbers (xxxx) indicate the specific type of error.

- Turn the printer off and then on.
- Try printing a job from a different software application. If the job prints, go back to the first application and try printing a different file. (If the message appears only with a certain software application or print job, the customer should contact the software vendor for assistance.)

If the message persists, try the following procedures:

- Turn the printer off and then on.
- Reseat or replace the interface cable and power cycle the printer.
- Remove the DIMMs one at a time and power cycle the printer.
- If possible, use the parallel interface.
- With the EIO cards removed from the printer, perform a cold reset.
- If the error persists, replace the formatter.

8x.yyyy critical error (EIO accessory)

- The EIO accessory in slot x has encountered a critical error as specified by yyyy.

  x = Description

  1 = EIO slot 1 -The printer detected an error with the EIO card.

  2 = EIO slot 2 -The printer detected an error with the EIO card.

  6 = EIO slot 1 -The EIO card detected an error.
  The EIO card may be defective.

  7 = EIO slot 2 -The EIO card detected an error.
  The EIO card may be defective.

- Turn the printer off, and then turn the printer on.
- Reseat or replace the EIO board.

2 Service mode

Overview

Service mode allows service personnel to verify and manipulate internal printer settings and to access the diagnostic feature. Service mode should be used only by authorized service personnel.

Service mode tasks

You can perform the following tasks while in Service mode.

- Verify the page count.
- Set the page count.
- Set the maintenance count.
- Verify and set the serial number.
- Set the cold reset default. This sets the factory default paper size to either Letter or A4.
- Turn the diagnostic function on or off (for software developer's use only).
- Clear the event log.
- Use the extended Service mode.
- Reset softswitches.
- Perform a firmware download.
- Recalibrate the document scanner.
- Set the interval at which the `PERFORM PRINTER MAINTENANCE` message appears on the control panel.

Accessing Service mode

4000, 5000, and 8000 series only

Use the following procedure to access Service mode.

1. Turn the printer off.
2. Press **Select** and **Cancel Job** simultaneously while turning the printer on. Hold the keys down until all lights are illuminated. (If the control panel reads INITIALIZING, the keys were released too soon.)
3. Press the right side of the **Menu** key, and then press **Select**. SERVICE MODE appears.
4. To exit Service mode, press **Go**.

Accessing Service mode

3100 only

Use the following procedure to access Service mode.

1. Press **Backspace#**** to access the extended service menu.
2. Use the **<** and **>** keys to select the choices given in the extended service menu (see the Extended service menu tree, page 52) and press **Enter/Menu**.

See the display for further instructions. Notes about some of the menu choices are provided in the Extended service menu tree on page 52.

Setting the page count

4000, 5000, and 8000 series only

The page count is stored in the printer's non-volatile memory. If it is necessary to replace the formatter PCA, the page count should be set to the current value to reflect the age of the print engine. Use the following procedure to set the page count.

1 Before replacing the formatter PCA, print a Configuration Page to verify the current page count and serial number of the printer, if possible. Use the information on the Configuration Page to reset the page count and serial number for the new formatter PCA.

Note

Press the right side of the **Menu** and **Item** buttons to increase the value (+). Press the left side of the **Menu** and **Item** buttons to decrease the value (-).

2 Press **Menu+** to display SERVICE MENU.

3 Press **Item+** to advance to the PAGES=XXXXXX display. XXXXXX represents the page count currently stored in the non-volatile memory. The underlined character denotes the position of the cursor.

4 Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor will move to the first digit when you press the **Select** key.

5 Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit changes the value of the digit to 0).

6 Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.

7 Press **Go** to exit the Service Menu.

Setting the maintenance count

4000 and 5000 series only

The maintenance count should be reset only after a maintenance kit has been installed. Resetting the maintenance count resets the maintenance counter so that the message PERFORM PRINTER MAINTENANCE displays after another 150,000 (5000 series), 200,000 (4000 series), or 350,000 (8000 series) pages are printed.

Note

MAINTENANCE COUNT in the Service mode Menu sets the page count interval for when the next printer service is due for the printer. The maintenance count is set initially at the factory. Editing this number is similar to editing the PAGES item.

1. Hold down the **Item-** and **Value-** keys.
2. Turn the printer on.
3. Wait until RESET MAINTENANCE COUNT displays and then release both keys.

Setting the serial number

4000 and 5000 series only

Re-enter the serial number whenever you replace a formatter.

1. Press **Menu** to display the SERVICE MENU.
2. Press **Item+** three times. SERIAL NUMBER=XXXXXX displays. XXXXXX represents the page count currently stored in the printer's non-volatile memory. The underlined character denotes the position of the cursor.
3. Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor wraps around the first digit when you press the **Select** key.
4. Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit will change the value of the digit to 0).
5. Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.
6. Press **Go** to exit the Service Menu.

Setting the page count, maintenance count, and serial number

8000 series only

The page count, maintenance count, and printer serial numbers are stored in non-volatile memory. PAGECOUNT is the total number of images printed by the printer; MAINTCOUNT is the page count when the next preventive maintenance should be performed (every 350,000 images); and S.N. is the printer serial number (also located on the printer back cover).

If it is necessary to replace the formatter PCA, these numbers should be set to the current values to accurately reflect the age of the print engine. The printer service manual provides the procedure for setting these values.

Before removing the old formatter PCA, print a configuration page to verify the current values, if possible.

Note

If it is not possible to print a configuration page, try to verify the values before replacing the formatter PCA by following steps 1 through 5, below.

After verifying the page count, maintenance count, and printer serial number from the old formatter PCA, replace it with the new PCA.

1. Enter Service mode. See “Service mode” in the printer service manual for instructions.
2. When SERVICE MODE is displayed, press **Menu** to access the Service Menu.
3. Press **Items** to display Pages = Maintenance count = Maintenance Interval = Serial Number =.
4. Enter the appropriate values for each item.
5. Press **Go** to exit Service mode.

Setting the default paper size used in a cold reset

4000, 5000, and 8000 series only

Cold reset clears all data from the printer memory and sets all defaults back to the factory setting.

The default paper size is stored in NVRAM. Whenever the printer is cold reset, the default paper size is restored. The default paper size is set to the factory setting. Possible values are `COLD RESET PAPER=LETTER` and `COLD RESET PAPER=A4`. When replacing the formatter in countries that use the A4 paper size (in place of the letter- size paper), set the cold reset paper size to A4.

To customize the cold reset paper size:

1. Enter the Service mode. See “Service Mode in the printer service manual for instructions.
2. Press **Menu** to display `SERVICE MENU`.
3. Press **Item+** until `COLD RESET PAPER=LETTER* or A4` displays.
4. Press **Item+** to toggle between `LETTER` and `A4`.
5. Press **Select** to activate your choice.
6. Press **Go** to exit the Service Menu.

Diagnostics

4000, 5000, and 8000 series only

The diagnostics menu item enables or disables the use of the firmware diagnostic features. These features are accessible when DIAGNOSTICS=ON displays. To access the diagnostic features, verify that the printer is in the READY state and press **Select**.

Note

This procedure is for software developers only.

Clear event log

Select this item to clear the internal event log.

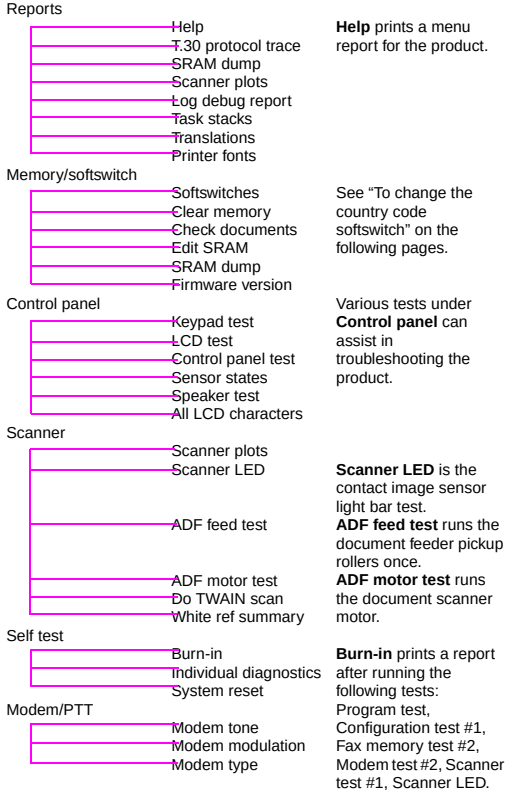
Extended service menu

3100 only

Use the extended service menu to run various self-tests and to change softswitch settings, such as the country code softswitch setting.

The following page shows the layout of the extended service menu settings in a hierarchical diagram.

Extended service menu tree



Self-test in extended service mode

3100 only

If you perform a self-test from the extended Service Menu, the printed report will also show the firmware revision number and details.

Note

Print the internal reports before performing extended service mode tests. The reports contain a record of all settings and can assist you in restoring the product to its settings.

The table below lists the tests that are performed during a self-test and the actions to take when tests fail.

Extended service mode self-test failures

Test	If the test fails, take these actions:
Configuration test #1	Replace the formatter.
Fax memory test #1	
Program test #1	**1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree, page 52). **3** If the test fails again, replace the formatter.
Configuration test #2	
Configuration test #3	
Configuration test #4	
Fax memory test #2	
Fax memory test #3	
Fax memory test #4	
Fax memory test #5	
Modem 1 test #1	
Modem 1 test #2	
Modem 1 test #3	

Extended service mode self-test failures

Test	If the test fails, take these actions:
Modem 1 dial tone detect	**1** Make sure that the telephone cable is plugged into the correct connector on the product and that the telephone line is operational (use a telephone to test the line). **2** If the test fails again, check the configuration settings in the control panel. **3** If the test fails again, replace the LIU.
Scanner test #1	This test fails under normal conditions if the document scanner is busy. If the document scanner is not busy: **1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging in the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree). **3** If the test fails again, replace the formatter.

Other tests in extended service mode

3100 only

The following charts shows tests that can be performed in extended service mode and provides a brief explanation of each test:

Extended service mode tests

Test	Explanation
Keypad test	Tests that all keys are functioning (by pressing the keys in sequence)
LCD test	Tests the control panel display
Control panel test	Tests the control panel lights
Sensor states	Shows current detector activation levels. Detector 1 and detector 2 are paper-size detectors. The control panel display shows the percentage of time each detector is activated
All LCD characters	Scrolls through the full list of control panel display characters
Scanner plots	Tests and recalibrates the document scanner
Scanner LED	After selecting this menu item, lift the document release door and verify that all of the LEDs in the contact image sensor are lit.
ADF feed test	Runs the document scanner pickup rollers once
ADF motor test	Runs the document scanner motor
Individual diagnostics	Run individual tests from the self-test sequence (see the extended service mode self-test failures table).
Modem tone	Generates tones with various frequencies from 300 Hz to 2425 Hz
Modem modulation	Generates various fax identification signals

Reports in extended service mode

3100 only

The following chart shows reports that can be printed from extended service mode and provides a brief explanation of each report.

Extended service mode reports

Report	Explanation
T.30 protocol trace	Prints a report of the G3 protocol transmissions and receptions
SRAM dump	Prints SRAM address values in an address range you select
Scanner plots	Prints the calibration page
Log debug report	Prints detailed fax and memory address information. Fax information includes job number, start time used, fax ID, transmission type, pages, communication mode, and status.
Task stacks	Prints address locations of various tasks
Translations	Prints text strings used in the display, beginning with the number you select. These text strings are printed in the language currently in use by the product. Compare the numbers in this report to the numbers in an English report to translate non-English messages on the display.
Printer fonts	Prints all characters of fonts available in memory
Firmware version (under “memory/ softswitch”)	Shows firmware revision information on the control panel display
White reference summary (under “scanner”)	Displays average, minimum, and maximum white reference values

Clear memory in extended service mode

3100 only

CAUTION

Clearing memory clears all parameters, which can render the product illegal or inoperable. Print the internal reports before clearing memory in extended service mode. The reports contain a record of all settings and can assist you in restoring the product to its settings.

To perform a system reset, use extended service mode to choose `Memory/softswitch`, and then choose `Clear memory`. Use the < and > keys to select the memory you want to clear:

- `Documents (and log)` deletes all documents stored in memory and all log information.
- `Phonebook` deletes all numbers stored in the phonebook.
- `Configuration` resets all menu settings printed in the configuration report to their defaults.
- `Softswitches` resets all softswitches to their defaults.
- `Counters` resets all page counts except the total number of pages printed. These page counts are printed at the end of the configuration report.
- `Everything` deletes and resets all of the above. Information retained includes white reference curve, total page count, and serial number.

Softswitches

3100 only

Note

Reset the country code softswitch whenever the formatter board is replaced or otherwise removed from the product, or when softswitches are reset to defaults.

Extended service mode allows you to change softswitches on the 3100 product. A softswitch is a set of eight bits. See the software service manual for a complete list of softswitches.

To change the country code softswitch

1. Press **Backspace**, **#**, *****, and *****, in sequence, to access the extended service menu.
2. Press **<** or **>** until `Memory/Softswitches` appears below `Service` on the control panel.
3. Press **Enter/Menu**.
4. If `Softswitches` does not appear below `Memory/Softswitches` on the control panel, press **<** or **>** until it appears.
5. Press **Enter/Menu**.
6. Use the keypad to enter **101** (the “country code” softswitch).
7. Press **Enter/Menu**.
8. Use the keypad to enter the sequence that corresponds to the country in which the product is used. (See the list on the following page.)

Country code softswitch sequences

Australia	00001011 (0B hex)
Denmark	00001100 (0C hex)
Finland	00001000 (08 hex)
France	00000111 (07 hex)
Germany	00000110 (06 hex)
Ireland	00000010 (02 hex)
Netherlands	00001101 (0D hex)
Norway	00000101 (05 hex)
Sweden	00000100 (04 hex)
United Kingdom	00000001 (01 hex)
United States	00000000 (00 hex)
Canada	00101001 (29 hex)

9 Press **Enter/Menu** to complete the softswitch change.

10 Press **Stop/Clear**.

The product will exit extended service mode within a few minutes.

Firmware download

3100 only

Newer versions of the firmware for the HP LaserJet 3100 product can be downloaded to the product.

To perform a firmware download

1 Restart the computer in MS-DOS® mode (do not use an MS-DOS window).

2 Press down and hold **Stop/Clear** while performing step 3.

3 Cycle power by unplugging the power cord from the power source, and then replugging in the power cord.

4 Type the following, substituting the current version of the firmware for XXX:

```
Copy /b leonXXX.rom lpt1:
```

Recalibrating the document scanner

3100 only

Recalibrate the document scanner if you notice that copies, items scanned to the computer, or faxes you send have black or white lines running through them.

To recalibrate the document scanner

1. Clean the HP LaserJet 3100 product before recalibrating it. (See “Cleaning the HP LaserJet 3100 product” in the product service manual.)
2. On the control panel, press **Enter/Menu**.
3. Press **<** once to display `Service` and press **Enter/Menu**.
4. Use the **<** and **>** keys to select `Scan Correction` and press **Enter/Menu**.
5. Insert a blank, bright white piece of letter-sized paper into the document feeder tray.

The HP LaserJet 3100 product pulls the piece of paper through and then prints a recalibration test page. Discard this page. The recalibration procedure is complete.

3 Power supply

Overview

This chapter details the distribution of AC and DC power.

Distribution of AC and DC power for the LaserJet 4000 series

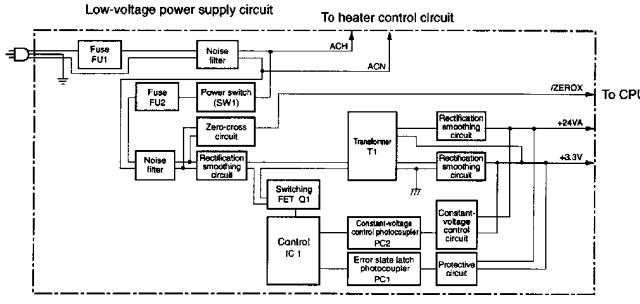
AC power is supplied to the low-voltage power supply circuit in the engine controller board when the power switch (SW 101) is turned on. The low-voltage power supply circuit supplies +24 V DC and +3.3 V DC to the printer. DC power drives the following items:

+24 VDC

- main motor
- scanner motor
- fan
- high-voltage power supply

+3.3 VDC

- sensors
- ICs on the engine controller board
- EIO accessories



Low-voltage power supply circuit (4000 series)

Distribution of AC and DC power for the LaserJet 5000 series

The AC line voltage for the LaserJet 5000 printer is applied through the main switch (SW 101) and supplied to the low-voltage power supply circuit through the fuse (FU1). The low-voltage power supply divides the AC voltage to +24 VDC, +5 VDC and +3.4 VDC and supplies them to the DC controller PCA. This circuit generates a zero-cross signal (ZEROX) and supplies it to the DC controller PCA.

DC power is supplied as follows:

+3.4 VDC

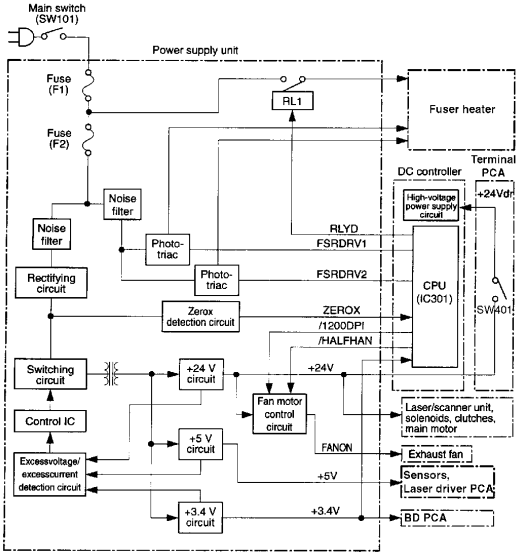
- ICs on the DC controller PCA and the BD PCA

+5 VDC

- laser driver PCA
- sensors

+24 VDC

- high-voltage power supply PCA to drive the main motor
- exhaust fan
- scanner motor
- clutches
- solenoids



Low-voltage power supply circuit (5000 series)

Distribution of AC and DC power for the HP LaserJet 3100

The AC, DC, and high-voltage power supply circuits are all contained within the ECU.

The AC power circuitry supplies AC voltage whenever the power cord is connected to the AC power source. AC voltage is distributed to the DC power supply circuitry and to the AC driver circuitry. The AC driver circuitry controls AC voltage to the heating element in the fusing assembly.

The DC power distribution circuitry distributes +5 V DC and +12 V DC as follows:

+5 V DC

- formatter
- photosensors
- DC controller circuitry
- laser/beam detect circuitry

+12 V DC

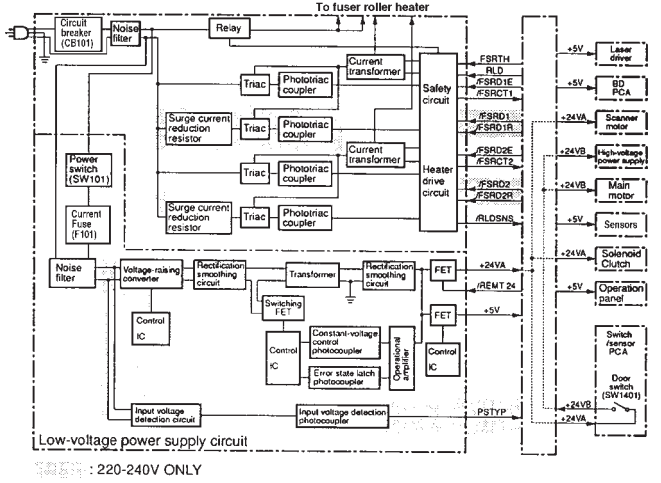
- motor
- scanner motor
- solenoid

+12VA DC

- high-voltage power supply

Distribution of AC and DC power for the HP LaserJet 8000 series

The AC and DC power supply circuits are contained in the low-voltage power supply (LVPS). The high voltages required for image formation are generated by the high-voltage power supply (HVPS). The low-voltage power supply and distribution system are illustrated below.



Low-voltage power supply circuit (8000 series)

Protection Systems

Problems on the load side, such as short-circuits, can cause an excessive flow of current from the DC power supplies or can generate abnormal voltage. When this happens, the excess-current and excess-voltage protection systems automatically shut off output voltage to protect the power supplies.

If the protection systems are activated and the power supply circuit does not output DC voltage, turn the printer off, correct the problem in the faulty load, and then turn the printer on again.

4 Input/Output (I/O)

Overview

This chapter provides information on cabling and the printer interface.

Bidirectional parallel interface

The formatter PCA receives incoming data through its bidirectional interface (IEEE 1284).

The bidirectional parallel interface (IEEE-1284 compliant) is compatible with Centronics parallel interfaces. To take advantage of its enhanced capabilities, such as bidirectional communication, the following must be provided:

- Software application support for these features.
- An IEEE-1284 compliant parallel cable with the correct pin configuration (see Table 4-1).

4000, 5000, and 8000 only

The user may configure the HIGH SPEED item in the Control Panel menu. The default setting, YES, allows the I/O to run at the higher speeds supported by most newer computers. When set to NO, the parallel interface runs at the slower mode that is compatible for older computers. The user may also configure the ADVANCED FUNCTIONS item. The default setting, ON, allows for two-way parallel communications. The OFF mode disables this advanced functionality.

Pin configurations

Signal Name	Printer Pin #	Parallel Port Pin #
nSTROBE	1	1
DATA 1	2	2
DATA 2	3	3
DATA 3	4	4
DATA 4	5	5
DATA 5	6	6
DATA 6	7	7
DATA 7	8	8
DATA 8	9	9
nACKNLG	10	10
BUSY	11	11
CALL (PE)	12	12
SELECT	13	13
nAUTOFd	14	14
On VDC (GND)	19 THRU 30	18 THRU 25
nFAULT	32	15
nSelIn	36	17

IEEE-1284 compliant parallel cables

HP helped develop the IEEE-1284 standard and is one of the first companies to introduce products that are compliant with it. HP offers four IEEE-1284 compliant parallel cables. Each is described below.

Part number	Length	Connector type
C2950A	2 meters (7 feet)	Host A to printer B (large) connector
C2951A	3 meters (10 feet)	Host A to printer B (large) connector
C2945A	2 meters (7 feet)	Host A to printer C (small) connector
C2946A	3 meters (10 feet)	Host A to printer C (small) connector
C2947A	10 meters (33 feet)	Host A to printer C (small) connector

Maximum I/O Cable Lengths

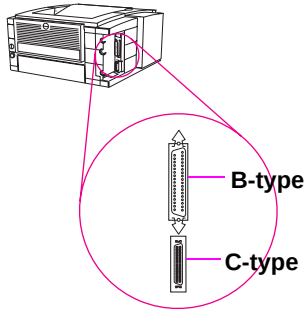
Serial RS-232C RS-422A	15 meters (50 feet) 610 meters (2000 feet)
Parallel (non-IEEE-1284)	3 meters (10 feet)
Parallel (IEEE-1284) with “B” type connector	3 meters (10 feet)
Parallel (IEEE-1284) with “C” type connector	10 meters (33 feet)

Attaching the printer cables

The printer's parallel port can have one or both of the following connectors:

B-type parallel (large)

C-type parallel (small)



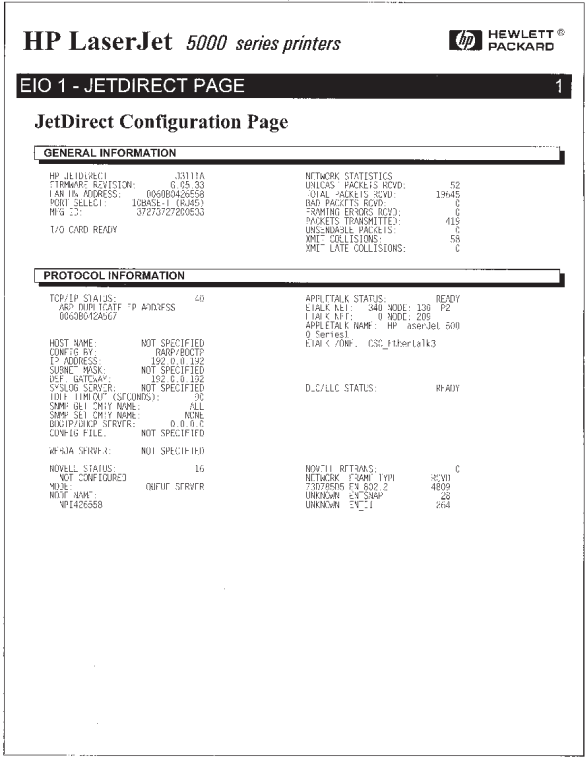
Printer interface connections

RS-232-C/RS-422-A serial interface

For this information, see the wiring diagram for common serial input/output cables in the printer service manual.

Configuring the computer interface

To configure the computer interface, see the *HP LaserJet Family Quick Reference Service Guide*, Volume I.



HP LaserJet *5000 series printers*

HEWLETT PACKARD

EIO 1 - JETDIRECT PAGE 1

JetDirect Configuration Page

GENERAL INFORMATION

HP JETDIRECT: J3111A
FIRMWARE REVISION: G.05.33
LAN HW ADDRESS: 0060B0426558
PORT SELECT: 10BASE-T (RJ45)
MFG ID: 3723727200503

I/O CARD READY

NETWORK STATISTICS
UNICAST PACKETS RCVD: 52
TOTAL PACKETS RCVD: 13645
BAD PACKETS RCVD: 0
FRAMING ERRORS RCVD: 0
PACKETS TRANSMITTED: 415
UNSENDABLE PACKETS: 0
XMIT COLLISIONS: 58
XMIT LATE COLLISIONS: 0

PROTOCOL INFORMATION

TCP/IP STATUS: 40
IP ADDRESS: 192.0.0.192
SUBNET MASK: NOT SPECIFIED
DEF. GATEWAY: 192.0.0.192
SYSLOG SERVER: NOT SPECIFIED
IDLE TIMEOUT (SECONDS): 90
SNMP GET CMTY NAME: ALL
SNMP SET CMTY NAME: NONE
BOOTP/DHCP SERVER: 0.0.0.0
CONFIG FILE: NOT SPECIFIED

WEBJA SERVER: NOT SPECIFIED

NOVELL STATUS: 16
NOT CONFIGURED
MODE: QUEUE SERVER
NDS TREE NAME:
NPI426558

APPLETALK STATUS: READY
ETALK NET: 340 NODE: 138 P2
TALK NET: 0 NODE: 209
APPLETALK NAME: HP LaserJet 5000 Series
ETALK ZONE: CSC_EtherTalk3

DLC/LLC STATUS: READY

NOVELL RETRANS: 0
NETWORK FRAME TYPE
3078565 EN_802.2 4809
UNKNOWN EN_SNAP 28
UNKNOWN EN_II 264

LocalTalk I/O*

The printer implements AppleTalk networking protocol through LocalTalk hardware. The LocalTalk network cable (HP part number 92215N) is connected through the EIO card.

Expanded I/O*

The optional expanded I/O card can be installed in the slots provided on the Formatter PCA. The expanded I/O card provides automatic I/O switching between multiple computers or networks connected to the printer. The network version printers include the HP JetDirect Multi-protocol Network Card with Ethernet/10Base-T and 10Base-2, and LocalTalk.

Flash*

Flash is provided in optional 2 and 4 megabyte (MB) flash memory DIMMs for storage of forms, fonts, and signatures.

Disk*

The optional EIO-based hard disk is used for creating multiple original prints (mopies) and for storing forms, fonts, and signatures.

*This feature does not apply to the HP LaserJet 3100.

5 Media specifications

Overview

Use media that meet the specifications listed on the following pages. By doing so, you will minimize the incidents of paper jams, prevent premature wear to the printer, and reduce repair costs. Hewlett-Packard recommends testing print media before buying it in large quantities.

Note

For complete paper specifications for all HP LaserJet printers, see the *HP LaserJet Family Paper Specification Guide*.

Paper sizes

Metric System

Size	Metric Dimensions	U.S. Dimensions
A0	841 x 1189 mm	33.1 x 46.8 in
A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3. in
B4 (ISO)	250 x 353 mm	9.8 x 13.9 in
B5 (ISO)	176 x 250 mm	6.9 x 9.8 in

Imperial (U.S.) System

Size	U.S. Dimensions	Metric Dimensions
Ledger	11 x 17 in	279 x 432 mm
Legal	8.5 x 14 in	216 x 356 mm
Letter	8.5 x 11 in	216 x 279 mm
Executive	7.3 x 10.5 in	191 x 267 mm
Custom	5.8 x 8.2 in to 8.5 x 14 in	149 x 210 mm to 216 x 356 mm
JIS B4**	10.1 x 14.3 in	257 x 364 mm
JIS B5**	7.2 x 10 in	182 x 257 mm
J Postcard*	3.9 x 5.8 in	100 x 148 mm
J Double Postcard*	5.8 x 7.9 in	148 x 200 mm

* J - Japanese
** JIS Japanese Industry Standard

Paper specifications

Category	Specifications
Acid content	5.5 pH to 8.0 pH
Basis weight: 4000 series Tray 1 4000/4000 N Tray 2 4000 T/4000 TN Tray 2 and Tray 3 4000 series optional 500-sheet tray 4000 series Duplexer	 60 to 199 g/m^2 (16 to 53 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs)
5000 series: Tray 1 Tray 2 or optional 250-sheet Tray Optional 500-sheet Tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
3100: Paper input bin Single-sheet input slot Document feeder tray	60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 44 to 105 g/m^2 (12 to 28 lbs) (up to 67 lbs using the special media lever)
8000 series: Standard output bin Left output bin Optional 2000-sheet input tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
Optional envelope feeder: 4000 series 8000 series	 75 to 105 g/m^2 (20 to 28 lbs) 60 to 90 g/m^2 (16 to 24 lbs)
Caliper	3.0 to 7.0 mils (0.094-0.18 mm)
Curl in ream	Flat within 5 mm (0.2 in)
Condition of cut edge	Cut with sharp blades with no visible fray
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205°C (400°F) for 0.1 second
Grain	Long grain
Moisture content	4% to 6% by weight
Smoothness	100-250 Sheffield

Paper weight equivalences

Use this table to determine approximate equivalent points in weight specifications other than U.S. bond weight. For example, to determine the equivalent of 20 lb U.S. bond weight paper in U.S. cover weight, locate the bond weight (in row 3, fourth column) and scan across the row to the cover weight (in the sixth column). The equivalent is 28 lb.

Note

Shaded areas indicate a standard weight for that grade.

Metric wt (g/m^2)		**U.S. weights (lb) or thickness (mm)**						
Europe	Japan	Postcard* thickness	Bond Wt	Text book Wt	Cover Wt	Bristol Wt	Index Wt	Tag Wt
60	60		16	41	22	27	33	37
64	64		17	43	24	29	35	39
75	75		20	50	28	34	42	46
80	80		21	54	30	36	44	49
80	81		22	56	31	38	46	51
90	90		24	60	33	41	50	55
100	100		27	68	37	45	55	61
105	105		28	70	39	49	58	65
120	120		32	80	44	55	67	74
120	128		34	86	47	58	71	79
135	135		36	90	50	62	75	83
148	148	0.18	39	100	55	67	82	91
157	157	0.19	42	107	58	72	87	97
163	163	0.20	43	110	60	74	90	100
176	176	0.23	47	119	65	80	97	108
199	199		53	134	74	90	110	122

* U.S. postcard measurements are approximate. Use for reference only.

Troubleshooting paper problems

Paper problems can be difficult to detect. The following series of steps will help isolate paper-induced problems versus printer problems:

- Isolate a paper path.
- Isolate a brand of paper.
- Isolate a type of paper.
- Evaluate paper-use practices.
- Evaluate environmental conditions.

Here are some paper usage tips:

- Turn the paper over and print on the other side. Doing so often corrects excess paper curl.
- Rotate the paper 180° (end-for-end) to feed a different leading edge. This can help correct multi-sheet feeding problems.

Papers to avoid

- NCR self-carbon (or “carbonless” paper)
- paper that has been preprinted (such as letterhead) with ink that will not withstand fuser heat (205° C [400° F] for 0.1 second)
- plastic-fiber paper
- embossed paper
- paper with cutouts or perforations
- chemically treated paper
- coated paper
- synthetic paper
- multi-part forms
- odd-sized paper

If your printer is having trouble with paper jams, multi-feeds, or misfeeds, use HP-brand paper: HP 20 lb Multi-Purpose Paper, part number 9300-2092; HP 24 lb LaserJet Paper, part number 9300-2091.

General tips

Paper curl

Paper curl results from both the heating process used to bond the print image (toner) to the paper and from the path that the paper must negotiate through the printer.

Take the following actions to help reduce paper curl:

1. Turn the paper over in the input tray. Some paper packages (reams) have an arrow indicating the preferred printing side. Experiment to determine which orientation yields the least curl.
2. Try a different output paper path (if available for your printer). Using the “face-up” output path may yield more acceptable results than the standard “face-down” output bin.
3. Protect the paper from adverse environmental conditions prior to use. Paper designed for laser printing has an initial moisture content of 4-6 percent which is maintained as long as it is stored properly. Once the paper has been removed from its packaging it will dry out or absorb additional moisture, depending on the environment. Excess moisture in the paper will increase the amount of curl.
4. Try a different type or brand of paper. Not all paper is designed for laser printing.

Much of the paper curl that is induced by the laser printer fusing process will tend to relax within the first 24 hours following printing. However, the curl on the leading edge of the page may remain longer because the leading edge tends to remain in contact with the fusing roller for longer periods.

Envelope specifications

Category	Specifications
Basis weight	Should not exceed 105 g/m^2 (28 lb)
Caliper	3.3 to 5.5 mils (0.084 to 0.14 mm) single layer thickness
Curl	Less than 6 mm (0.25 in) curl across entire surface
Finishing	Accurate, sharply creased folds with no more than two thicknesses of paper at the leading edge
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second
Moisture content	4% to 6% by weight
Paper	Must meet all the normal paper specifications
Smoothness	100 to 250 Sheffield

Envelope sizes

Imperial (U.S.) system

Size	U.S. Dimensions	Metric Dimensions
Tray 1: Minimum Maximum	 3 x 5 in 8.5 x 14 in	 76 x 127 mm 216 x 356 mm
Optional envelope feeder: Minimum Maximum	 3.5 x 6.3 in 7 x 10 in	 90 x 160 mm 178 x 254 mm

Envelopes to avoid

Do not use the following envelopes:

- with clasps, snaps, or tie strings
- with transparent windows, holes, perforations, or cutouts
- having an open flap with adhesive exposed
- having paper, inks, adhesives, or materials that discolor, melt, offset, or release hazardous emissions when exposed to 205° C (400° F)
- having extremely smooth, shiny, rough, textured, or deeply embossed surfaces
- damaged, wrinkled, or irregularly shaped
- constructed with encapsulating adhesives that do not require moistening, but rely instead on pressure to seal them

Preventing printer malfunctions caused by envelopes

When you are printing on envelopes, use these preventive measures to avoid printer malfunctions.

- Carefully feed the envelopes into the printer.
- Be aware of the envelope’s construction.

Envelope feeding

Follow these preventive measures when feeding envelopes:

- Envelopes can be manually fed through the printer or they can be fed automatically through an envelope tray or feeder.
- Closely inspect the leading edge of the envelopes before feeding them into the printer. Ensure that the leading edge is flat. Watch for envelope curl. Flatten the leading edge of the envelope before printing.
- Be patient; in manual feed mode the printer displays a message when it is ready to accept the next envelope. Wait for this message to appear before inserting the next envelope.
- Do not allow a large quantity of envelopes to accumulate in the output bin.
- On most printers, use the rear (or front) output bin (if available) when printing envelopes. Do not use the top (face-down) output bin.

Envelope construction

- The corner folds need to be well-creased, with no more than two thicknesses of paper.
- The envelopes must lay flat.
- The paper grain should be diagonal to the direction of the feed.
- Adhesives must meet HP specifications for fusing compatibility.
- Basis weight must not exceed 105 g/m^2 (28 pounds).
- Do not use envelopes with clasps, snaps, tie strings, or windows.
- Do not use envelopes made of synthetic materials.

Label specifications

Category	Specifications
Adhesive	Must not be on any external surfaces of the label before, during, or after printing. Label construction and die-cutting must not allow labels to peel off during transport, printing, or fusing.
Caliper	Must not exceed 0.18 mm (0.007 in)
Curl	In ream: flat within 13 mm (0.5 in)
Finishing precision	Cut sheet within 0.79 mm (0.031 in) of nominal and 0.20° square
Fusing compatibility	All adhesions, carrier sheets, top sheets, and other materials used in label construction must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.
Packaging	Use moisture-proof wrap to preserve properties.

Preventing printer malfunctions caused by adhesive labels

As with envelopes, prevention is the best way to avoid printer malfunctions caused by adhesive labels. To prevent paper jams and feed problems, labels must meet the following requirements:

- Be cut long grain (as opposed to short grain).
- Totally cover the carrier sheet (no spaces between labels, no removed labels).
- Contain no excessive glue. (The adhesive should be acrylic-based emulsion and should not come into direct contact with the printer.)
- Meet HP specifications for fusing compatibility.
- Meet HP specifications for caliper.
- Have a carrier sheet that is not too smooth.
- Use the flat paper path (manual feed slot and rear, or front, face-up delivery door), which is the recommended printing method.

Transparency specifications

Category	Specifications
Caliper	3.9 to 4.3 mils (0.100 to 0.110 mm)
Cutting angle	90° ± 0.2°
Finishing precision	Cut sheet to within 0.8 mm (0.03 in) of nominal and ± 0.2° of square
Fusing compatibility	Overhead transparency material must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset material, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.

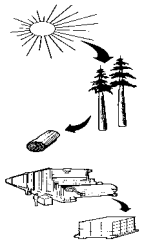
Preventing printer malfunctions caused by transparencies

Use these preventive measures to avoid printer malfunctions caused by transparencies:

- Use the straightest paper path to avoid curling and other problems.
- Use transparencies with the correct resistivity.
- Use transparencies that meet HP specifications for fusing compatibility.
- Remove each printed sheet from the tray and place it on a flat surface before printing the next sheet.

HP paper training video

HP has developed a training video focusing on how paper is manufactured and how the manufacturing process relates to the use of paper in HP LaserJet printers. Part numbers are shown below.

	Part Number	Version (VHS Format)
 The Paper Video explains the manufacturing process.	5961-0711	National Standard Television Committee (NTSC) version (U.S.)
	5961-0712	PAL version (Europe, Asia)

6 Toner cartridge information

Overview

This chapter provides information on toner cartridges and their use. Hewlett-Packard recommends using HP toner cartridges, which are designed specifically to enhance the output from the HP LaserJet family of printers.

Cartridge weights and page counts

HP LaserJet	Product	Cartridge	Full weight	Empty weight	Page count at 5% coverage
4000 series	C4127A	EP-A	1295 gm (45.7 oz)	1020 gm (36 oz)	6,000
4000 series	C4127X	EP-X	1445 gm (51 oz)	1000 gm (35.3 oz)	10,000
5000 series	C4129X		1880 gm (66.3 oz)	1450 gm (51.1 oz)	10,000
3100	C3906A		730 gm (26.1 oz)	640 gm (22.7 oz)	2,500
8000 series	C3909A		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000
Mopier 240	C3909S		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000

Potential toner cartridge issues

Banding

When printing with a laser printer, the toner is applied across the page in horizontal strips. The page is moved through the printer and toner is continually applied. When printing text or black image pages, a large amount of toner is deposited on the page. As the amount of toner deposited on the page decreases, slight speed variations become more apparent. As the resolution (dots per inch) and the speed (pages per minute) increase, a variation in pattern intensity may appear on the page as lines or bands.

The bands are more visible in certain grayscale patterns. High speed printers that are capable of printing high resolution grayscale patterns are more likely to display the pattern variations. Changing the grayscale pattern or reducing the resolution may significantly reduce the amount of banding that occurs.

Character voids

Small gaps or voids may appear in some of the characters when printing on media other than standard photocopier paper. These “character voids” occur because some print media does not accept the transfer of toner as well as others.

To minimize the occurrence of character voids, avoid media with a rough finish. Use media that is within the Hewlett-Packard paper specifications listed in the user guide or the *HP LaserJet Family Paper Specification Guide*. If the finish is too rough, the surface will consist of large inconsistencies. If the finish is too smooth, toner will not adhere well. Adjusting the print density may affect the severity of character voids.

Toner cracking

When the paper is folded and the crease aligns with a line of text, it is possible with certain types of paper for the text to break along the line, giving the appearance of a white line through the text. Papers that do not meet the smoothness (100-250 Sheffield, 100-500 Bendtsen) or wax pick (>11 Dennison) are likely to exhibit this effect more than others.

Toner in the HP LaserJet printers is composed of minute particles of pigmented plastic material (styrene) and iron oxide. When the toner is subjected to the fusing temperature, these individual iron-impregnated plastic particles become part of a larger plastic image on the page. When the printed page is subsequently folded, the plastic image must also give, in some fashion, to accommodate the fold. If the print image has been well-set into the paper, this resulting break in the plastic will not be apparent. However, if the toner is unable to adequately penetrate the paper fibers or if, in the process of folding the paper, the paper fibers behind the toner break away from the page itself, the result will be a “white line” through the image. There are several ways to minimize this effect:

- Ensure that the paper being used meets all of the specifications provided in the *HP LaserJet Printer Family Paper Specification Guide*; in particular the smoothness and wax pick.
- A lighter density setting will ensure that the toner image will be composed of less plastic material, thus minimizing the resulting effect of trying to fold the toner image.
- For the reasons listed earlier, a more narrow character-stroke width might also help.
- Magnetic Ink Character Recognition (MICR) paper may fix toner cracking problems (see also the *HP MICR User’s Guide*).

In xerographic (laser) printing, using paper that has a laid finish often causes problems. The surface roughness of the paper is often responsible for the problems.

Paper that is stiffer than xerographic paper also causes problems. Stiff papers do not fold well. When stiff paper is folded and a toner image is applied to the paper’s surface, the problems are even worse.

Transfer of toner image

After printing a document on an HP LaserJet printer, folding it, and sending it through the mail, you might observe that a portion of the print image was transferred to opposing surfaces of the folded document.

The laser printing process uses a pigmented plastic powder (toner) to form a print image that is first transferred to a sheet of paper (or other print medium) and then melted (fused) onto the surface of the paper to form a permanent image. Though paper is usually thought of as being “soft,” it is actually quite abrasive. When the printed page is folded, movement under pressure between a paper surface and the toner image may cause the paper to abrade (scratch) the toner, causing a transfer of the toner material onto the opposing surface of the paper. This can be demonstrated by rubbing a print image against (or into) a clean sheet of paper.

Some machinery, such as that used by the U.S. Postal Service to sort mail, can apply the necessary pressure and agitation to cause this toner image transfer phenomenon.

To minimize this effect:

- Minimize the amount (or height) of toner used to produce the print image.
- Use a paper that is less abrasive.
- Ensure optimal fusing of the toner (print) image to the paper.

The **amount** of toner used to produce a print image is controlled by the print density dial, slide, or control panel settings in the HP LaserJet printers. The print density should be adjusted for a **lighter** image to reduce the amount (height) of toner prone to abrasive transfer.

HP LaserJet printers have been designed for optimum results with xerographic (laser) bond papers, such as XEROX 4024 photocopy paper. The properties of this type of paper (for example, surface roughness, composition, moisture content) are such that the other causes of potential toner transfer are minimized. Photocopy papers are typically less abrasive than other types of paper (such as writing bond) and are also formulated to ensure optimal fusing of the toner image. Using other types of paper will generally yield less than optimal results in laser printers. For help in selecting paper suitable for use in the

HP LaserJet printers, refer to the *HP LaserJet Printer Family Paper Specification Guide*. This guide can be ordered by calling HP Parts Direct at 800-227-8164 in the U.S., or HP Distribution at 970-339-7009.

Because of the way that laser printing is accomplished, currently there is no way to entirely eliminate the possibility of toner transfer. However, using these techniques should yield more satisfactory results and will often reduce the problem to imperceptible levels.

Gray background on envelopes

Poor print quality is normally the result of using envelopes that are of the incorrect weight or finish. The paper used to construct the envelope may be embossed; or may be too heavy, too rough or too slick; or may be made in such a way that it is incompatible with the high temperatures encountered in toner fusing. The result is that the toner does not adhere well to the surface. Also, on heavier envelopes, a gray background may appear on the front (or print side) of the envelope. To reduce the gray background, the print density may need to be set to a darker setting.

HP PLANET PARTNERS

The U. S., Canada, Europe, and Australia now have HP toner cartridge recycling programs. The used toner cartridge should be placed in the wrapper and box that held the new cartridge and sent back for recycling.

U.S.

A brochure explaining the recycling program in the U.S., part number 5091-1325EUS, can be ordered. The customer returns used toner cartridges via UPS at no cost to the customer using shipping labels included in the brochure. The toner cartridges can be shipped one at a time or in volume shipments. Some of the parts are recycled to make new cartridges. Other parts are melted for re-use as raw materials. If the customer has any questions, and to receive the free recycling brochure, refer them to the Customer Information Center at (800) 752-0900.

AUSTRALIA

Australian customers can send their toner cartridges to their local HP dealer. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

EUROPE

The recycling program in Europe currently includes these countries: Germany, Switzerland, Austria, United Kingdom, the Netherlands, and Sweden. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

CANADA

Canada uses Federal Express for their recycling program. At least eight but no more than 40 Toner Cartridges can be shipped at one time. Shipments of less than eight cartridges are at the shipper's expense. Call Federal Express at (800) GoFedEx; (800) 463-3339 to arrange for free pickup of the bundled cartridges. Fill out a Federal Express Waybill or obtain a preprinted one from your dealer.

In Alberta, B.C., Manitoba, NWT, Saskatchewan, and the Yukon,
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6551 Westminister Hwy, Unit 160
Richmond, B.C. V7C 4V4
Acct. No.: 1246-1740-5

In the Atlantic provinces, Ontario, and Quebec
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6600 Goreway Drive, Unit C
Mississauga, Ontario L4V 1S6
Acct. No.: 1246-1740-5

For more information, call: Canada wide: (800) 387-3867
Dept. 129; Toronto: (800) 678-9430 Ext. 4981

Note

Recycling information is included in the toner cartridge package.

For additional information about HP corporate-wide, environmental policies, practices, and awards, visit **www.hp.com**.

Refill Statement

Hewlett-Packard toner cartridges have been designed to maximize the reliability of the HP LaserJet printer by including all of the components that need frequent replacement or adjustment within the cartridge. While we recognize that all parts of this critical printer mechanism will not wear consistently, the HP toner cartridge has been designed to optimize the exceptional print quality that is synonymous with the HP LaserJet printer name. While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or under a maintenance contract, we also do not recommend their use for the following reasons:

1 The HP LaserJet toner cartridge is not designed to be refilled or remanufactured.

2 Hewlett-Packard has no control or process to ensure that a refilled toner cartridge will function at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict what the long-term effect on the printer's reliability could be from using different toner formulations found in refilled cartridges. Because the HP LaserJet printer has the highest reliability reputation in the industry, we are concerned about any usage that might affect this reputation.

3 Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge. The print quality of the HP LaserJet toner cartridge directly influences the customer's perception of the HP LaserJet printer itself. The high print quality of the HP LaserJet printer is one of the primary reasons for the success of the product and we are keenly interested in maintaining that image.

The entire family of HP LaserJet printers is covered under a standard one-year warranty from the date of purchase. Hewlett-Packard offers optional maintenance contracts after the one-year warranty expires. The use of refilled toner cartridges alone does not affect either the warranty or any maintenance contract purchased from HP. **However, if an HP LaserJet printer failure or damage is found to be directly attributed to the use of a refilled toner cartridge, the repair will not**

be covered under the warranty or by the maintenance contract. Rather, standard time and material charges will be applied to service the printer for that particular failure or damage.

Hewlett-Packard is constantly striving to provide the highest quality printer products possible. The HP LaserJet printer family was designed for optimum output performance when the printing mechanism is periodically replaced with a new HP toner cartridge. The HP toner cartridge is designed specifically to enhance the output from the HP family of printers. We know that the highest quality print results will be obtained when new HP toner cartridges are used with HP LaserJet printers.

7 Printer options and replaceable parts

Overview

The following tables list the products, product numbers, product descriptions, and service part numbers for each printer. Parts can be ordered through HP Parts Direct Ordering at (800) 227-8164 (U.S. only). For additional product support, see the inside back cover of this guide.

Printer options and replaceable parts

Product	Product Number	Product Description	Service Part Number
Memory	C4135A	4 MB EDO DIMM	C4135-67901
	C4136A	8 MB EDO DIMM	C4136-67901
	C4137A	16 MB EDO DIMM	C4137-67901
	C4140A	4 MB SDRAM DIMM	C4140-67901
	C4141A	8 MB SDRAM DIMM	C4141-67901
	C4142A	16 MB SDRAM DIMM	C4142-67901
	C4143A	32 MB SDRAM DIMM	C4143-67901
	C3913A	64 MB SDRAM DIMM	C3913-67901
	C4286A	2 MB Flash DIMM	N/A
	C4287A	4 MB Flash DIMM	N/A
Fonts	C4292A	Traditional Chinese Font DIMM (8 MB Asian ROM)	N/A
	C4293A	Simplified Chinese Font DIMM (8 MB Asian ROM)	N/A
	D4838A	Korean (8 MB Asian ROM)	N/A
Enhanced I/O Cards	J3110A	Ethernet RJ-45 only	N/A
	J3111A	Ethernet RJ-45 and BNC, LocalTalk	J3111-61003
	J3112A	Token Ring RJ-45 and DB-9	N/A
	J3113A	10/100Base-TX networks	N/A
Hard Disk	C2985A	Hard Disk	N/A

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Product	Product Number	Product Description	Service Part Number
Parallel Cables	C2950A	Parallel IEEE-1284 compliant A to B (2.0 m)	N/A
	C2951A	Parallel IEEE-1284 compliant A to B (3.0 m)	N/A
	C2945A	Parallel IEEE-1284 compliant A to C (2.0 m)	N/A
	C2946A	Parallel IEEE-1284 compliant A to C (3.0 m)	N/A
	C2947A	Parallel IEEE-1284 compliant A to C (10.0 m)	N/A
Serial Cables	C2932A	9-9 pin serial cable (male/female)	N/A
	C2933A	9-25 pin serial cable (male/female)	N/A
	C2809A	25-9 pin serial adaptor (male/female)	N/A
	92215S	Macintosh Computer Serial Cable	N/A
	92215N	Macintosh Network Cable Kit	N/A
Trays	C4781A	2,000-sheet Input Tray and Paper Feeder	N/A
	C4124A	500-sheet Paper Feeder and Tray	C4125-67901
	C4125A	500-Sheet Universal Replacement Tray	N/A
	C3122A	Standard 500-sheet Tray	N/A
	C4115A	500-sheet Paper Feeder and Tray	N/A
	C4117	500-Sheet Replacement Tray	C4117-69001

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Product	Product Number	Product Description	Service Part Number
Trays, continued	C4780A	Two 500-sheet trays and Paper Feeder	N/A
	C4114A	250-sheet Paper Feeder and Tray	N/A
	C4126A	250-sheet Universal Replacement Tray	C4126-67901
	C4116A	250-sheet Replacement Tray	C4116-69001
	C4098A	Tray 2 (500-sheet Input Tray) or Tray 4 (2 x 500-sheet Input Tray)	RG5-3951-000CN
	C4099A	Tray 3 (500-sheet Input Tray) or Tray 5 (2 x 500-sheet Input Tray)	RG5-3952-000CN
Envelope Feeder	C4122A	Envelope Feeder	C4122-69001
	C3765B	Envelope Feeder	
Duplexer	C4123A	Duplex Printing Accessory	C4123-69001
	C4113A	Duplex Printing Accessory	C4113-69001
	C4782A	Duplex Printing Accessory	
Mailbox	C4783A	7-bin Tabletop Mailbox	
	C4785A	Multibin Mailbox	
	C4787A	5-bin Mailbox with stapler	
Media	HPM1120	HP Multi-purpose Paper	M1120
	HPJ1124	HP LaserJet Paper	J1124

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Product	Product Number	Product Description	Service Part Number
Toner Cartridges	C4127A	Toner Cartridge (6,000 pages)	N/A
	C4127X	Toner Cartridge (10,000 pages)	N/A
	C4129X	Toner Cartridge (10,000 pages)	N/A
	C3906A	Toner Cartridge (2,500 pages)	N/A
	C3909A	Toner Cartridge (15,000 pages)	N/A
	C3909S	3 Toner Cartridges (15,000 pages) (Mopier 240)	N/A
Power Box	C4789A	Connects a multibin mailbox to the printer when the printer is on a printer stand.	N/A
Upgrade Kit	C4095A	LJ 5Si to LJ 8000 Upgrade Kit	N/A

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Product	Product Description	Service Part Number	Exchange Number
Maintenance Kit	Service Maintenance Kit with 110V fuser (4000 series)	C4118-67902	C4118-69001*
	Service Maintenance Kit with 220V fuser (4000 series)	C4118-67903	C4118-69002*
	Service Maintenance Kit with 110V fuser (5000 series)	C4110-67902	C4110-69006*
	Service Maintenance Kit with 220V fuser (5000 series)	C4110-67903	C4110-69007*
	Preventative Maintenance Kit with 110 V fuser (8000 series)	C3971B	C3971-69002*
	Preventative Maintenance Kit with 220 V fuser (8000 series)	C3972B	C3972-69002*

*Requires exchange

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8 Printer parts

Overview

This chapter provides the part numbers and descriptions of the most commonly used assemblies and subassemblies in the HP LaserJet printers. The shaded numbers in the tables refer to the location of the part in the printer, as shown in the corresponding illustrations.

Note

See your printer service manual for a complete listing of hardware components.

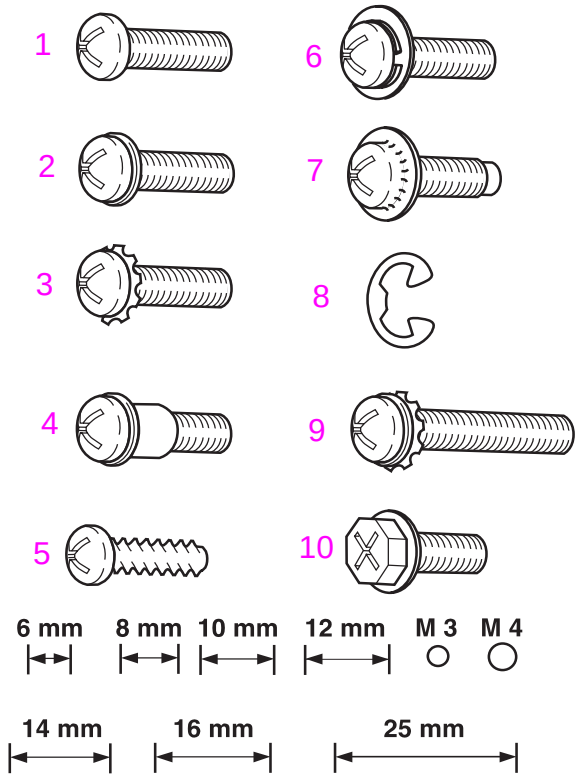


Figure 8-1 Common Hardware

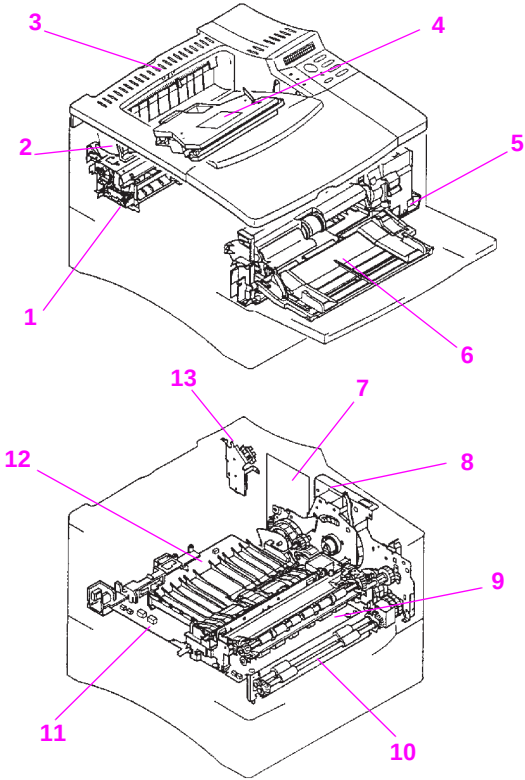
Common Hardware

	Part Number	Product Description	
1	XB1-2300-606CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-507CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-607CN	BH3 x 6mm	Pan-head Phillips
1	0515-1895	M3 x 8mm	Pan-head Phillips
1	XB1-2301-407CN	M4 x 14mm	Pan-head Phillips
1	XB1-2400-606CN	M4 x 6mm	Pan-head Phillips
1	XB1-2400-809CN	M4 x 8mm	Pan-head Phillips
1	0515-1912	M4 x 8mm	Pan-head Phillips
1	XB1-1300-807CN	M3 x 8 mm	Pan-head Phillips
2	FA9-1449-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0267-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0253-000CN	M3 x 8mm	Washer-head Phillips
2	XA9-0542-000CN	M3 x 10mm	Washer-head Phillips
2	XA9-0540-000CN	M4 x 8mm	Washer-head Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0389-000CN	M3 x 8mm	Star-washer Phillips
3	XA9-0654-000CN	M3 x 10mm	Star-washer Phillips
3	XA9-0192-000CN	M4 x 6mm	Star-washer Phillips
3	XA9-0828-000CN	M3 x 6mm	Star-washer Phillips
4	RBI-5552-000CN	M3	Shoulder Screw Phillips
4	RAI-7636-000CN	M3	Shoulder Screw Phillips
4	RBI-5489-000CN	M3 x 4mm	Shoulder Screw Phillips
4	XA9-0342-000CN	M3 x 8mm	Shoulder Screw Phillips
5	XB4-7300-609CN	M3 x 6mm	Self-tapping Phillips
5	XB6-7300-607CN	M3 x 6mm	Self-tapping Phillips
5	XB4-7400-809CN	M4 x 8mm	Self-tapping Phillips
5	XA9- 0870-000CN	M4 x 10mm	Self-tapping Phillips (black)
5	XB4-7401-009CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-007CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-209CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0773-000CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0916-000CN	M4 x 14mm	Self-tapping Phillips
6	XA9-0253-000CN	M3 x 8mm	Loose Flat/Lock Washer Phillips
6	XA9-0584-000CN	M3 x 12mm	Loose Flat/Lock Washer Phillips

	Part Number	Product Description	
7	FA9-1449-000CN		Star-washer trus-head Phillips
7	XB1-2302-507CN	M3 x 25mm	Trus-head Phillips
7	XB6-7300-809CN	M3 x 8mm	Trus-head Phillips
7	XA9-0326-000CN	M3 x 4mm	Trus-head Phillips
7	XB6-7300-807CN	M3 x 8mm	Trus-head Phillips
8	XD2-1100-242CN	2.4mm	Retaining Ring (e-type)
8	XD2-1100-322CN	3.2mm	Retaining Ring (e-type)
8	XD2-1100-402CN	4.0mm	Retaining Ring (e-type)
8	XD2-1100-502CN	5.0mm	Retaining Ring (e-type)
8	XD2-1100-642CN	6.4mm	Retaining Ring (e-type)
8	XG9-0260-000CN		Retaining Ring (e-type)
8	XD2-2300-507CN	5.0mm	Grip Ring (c-type)
9	XA9-0375-000CN	3m x 25 mm	Loose Flat/Star Washer Phillips
10	XA9-0686-000CN	M3 x 6mm	Hexhead Screw
10	XA9-0724-000CN	M3 x 8 mm	Hexhead Screw
10	XA9-0824-000CN	M3 x 10mm	Hexhead Screw
10	XA9-0813-000CN	M3 x 8mm	Hexhead Screw with washer

Notes

Parts for the HP LaserJet 4000 series

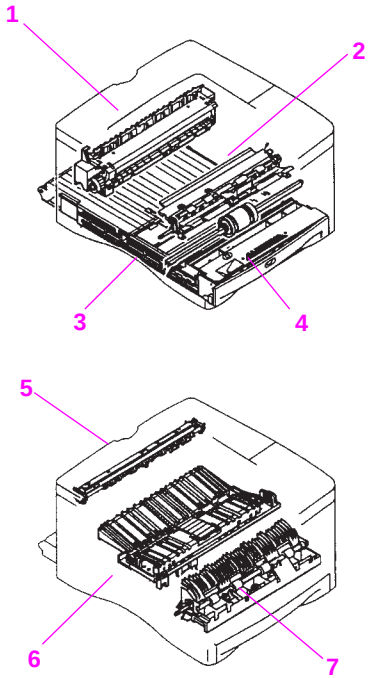


HP LaserJet 4000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4118-69003 (110V)** C4118-69004 (220V)**
2	Paper Delivery Assembly	RG5-2648-000CN
	Paper Pick-up Drive Assembly	RG5-2690-000CN
	Pick-up Roller	RB1-8865-000CN
	Feed Separation Roller	RF5-2490-000CN
	Drive Coupler	RB1-8877-000CN
3	Top Cover Assembly	RG5-2663-000CN
	Front Panel	RG5-2666-000CN
4	Laser Scanner Assembly	C4110-69008**
5	Tray 1 Pick-up Assembly	RG5-2655-000CN
	Tray 1 Pick-up Roller	RG5-3718-000CN
6	Tray 1 Assembly	RG5-2656-000CN
7	Formatter Assembly	C4118-69008**
8	Printer Drive Assembly	RG5-2653-000CN
	Release Rod	RB1-8756-000CN
	Main Motor	RH7-1331-000CN
9	Registration Assembly	RG5-2652-000CN
10	Paper Feed Assembly	RG5-2651-000CN
	Clutch	RB1-8974-000CN
11	ECU (Engine Controller Board)	C4118-69006 (110V)** C4118-69007 (220V)**
12	Paper Feed Guide Assembly	RG5-2643-000CN
	Paper Feed Belt	RB1-8668-000CN
	Transfer Roller	RG5-4283-000CN
13	Delivery Drive Assembly	RG5-3721-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



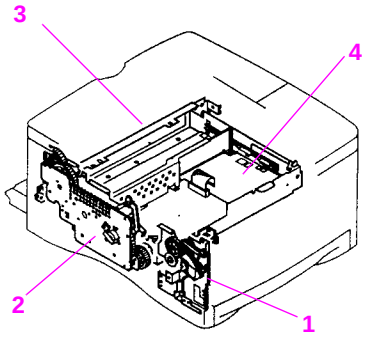
Major assembly locations (1 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4110-69002 (110V)** C4110-69003 (220V)**
2	Registration Assembly	RG5-3524-000CN
3	Paper Pick-up Assembly	RG5-3521-000CN
	Pick-up Roller	RB2-1820-000CN
4	Paper Tray	C4116-69001 (250-sheet)** C4117-69001 (500-sheet)**
5	Upper Delivery Assembly	RG5-3542-000CN
	Delivery Roller	RB2-1984-000CN
6	Paper Feed Belt Assembly	RG5-3526-000CN
	Paper Feed Belt (Large)	RB2-1887-000CN
	Paper Feed Belt (Small)	RB2-1888-000CN
	Transfer Roller	RG5-3579-000CN
7	Paper Feed Roller Assembly	RG5-3522-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



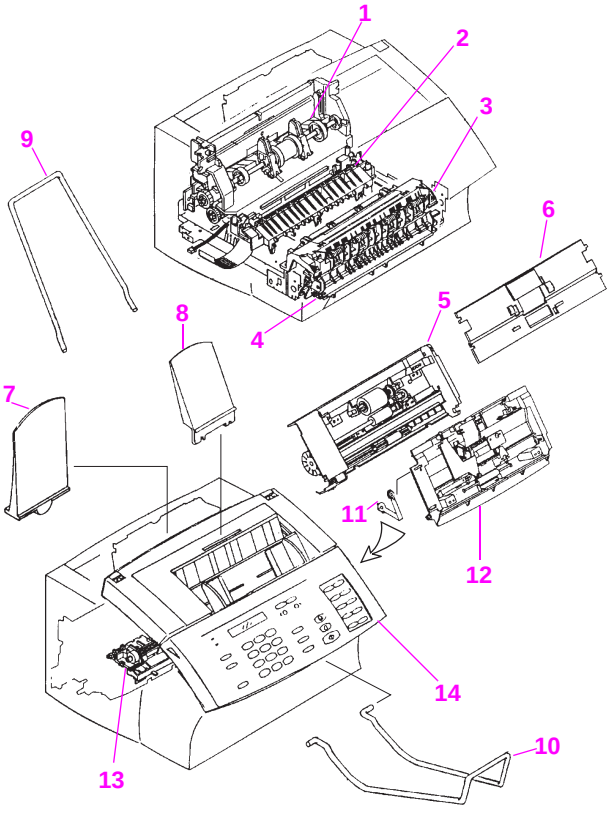
Major assembly locations (2 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Pick-up Drive Assembly	RG5-3544-000CN
	Spring	RS5-2434-000CN
2	Main Gear Assembly	RG5-3543-000CN
	Main Motor	RH7-1357-000CN
3	DC Controller	C4110-69001**
4	Formatter	C3974-69001**
	Laser Scanner Assembly	C4110-69008**
	DC Power Supply	C4110-69004 (110V)** C4110-69005 (220V)**
	Top Cover	RB2-1748-000CN
	Front Panel	RG5-3604-000CN
	Fan	RH7-1354-000CN
	Toner Cartridge Engagement Arm	RB2-1856-000CN
	Separation Pad with Spring	RG5-3585-000CN
	Paper-handling PCA	RG5-3560-000CN
	MP Separation Pad	RF5-2400-000CN

**These parts require exchange

Parts for the HP LaserJet 3100



Major assembly locations

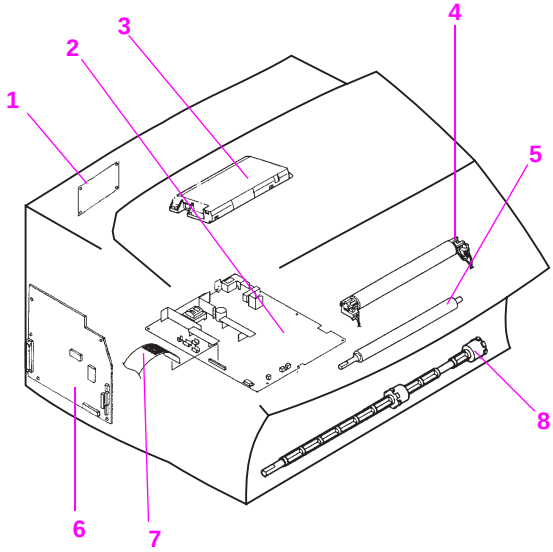
HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Paper Pick-up Assembly	RG5-3484-000CN
	Pick-up Roller Assembly	RG5-3486-000CN
	Clutch	RB1-7197-020CN
	Separation Arm Assembly	RB1-7181-000CN
	Input Sensor Assembly	RB1-7182-000CN
	Solenoid	RH7-5139-000CN
2	Transfer Guide Assembly	RG5-3452-000CN
	Transfer Roller	RF5-1534-000CN
3	Delivery Assembly	RG5-3474-020CN
4	Separation Guide Assembly	RG5-3475-020CN
	Lever Sensor Arm	RB1-7293-000CN
	Fuser Exit Roller Assembly	RF5-2368-000CN
5	Document Scanner Assembly	RG5-4223-000CN
	Pick-up Roller Assembly	RG5-4688-000CN
	Scanner Motor, AC 1.08 Watts	RH7-1376-000CN
	Contact Image Sensor Assembly	RG5-4239-000CN
	Cable, Contact Image Sensor	RG5-4233-000CN
6	Document Scanner Guide/Cover	RB2-3436-000CN
7	Paper Input Support*	RB2-3362-000CN
8	Paper Output Support*	RB2-3410-000CN
9	Document Feeder Support*	RB2-3455-000CN
10	Document Output Support*	RB2-3470-000CN
11	Strap*	HB1-2867-000CN
12	Upper Guide Assembly	RG5-4221-000CN
	Cover, Arm***	HB1-2895-000CN
	Sheet, Pad***	RB2-4114-000CN
	Document Scanner Separation Pad***	RB2-3430-000CN
13	Feed Assembly	RG5-3485-030CN
	Feed Roller	RB2-1699-000CN
14	Control Panel Assembly	RG5-4241-000CN

* These are customer-replaceable parts.

*** Replace these 3 parts as a set.

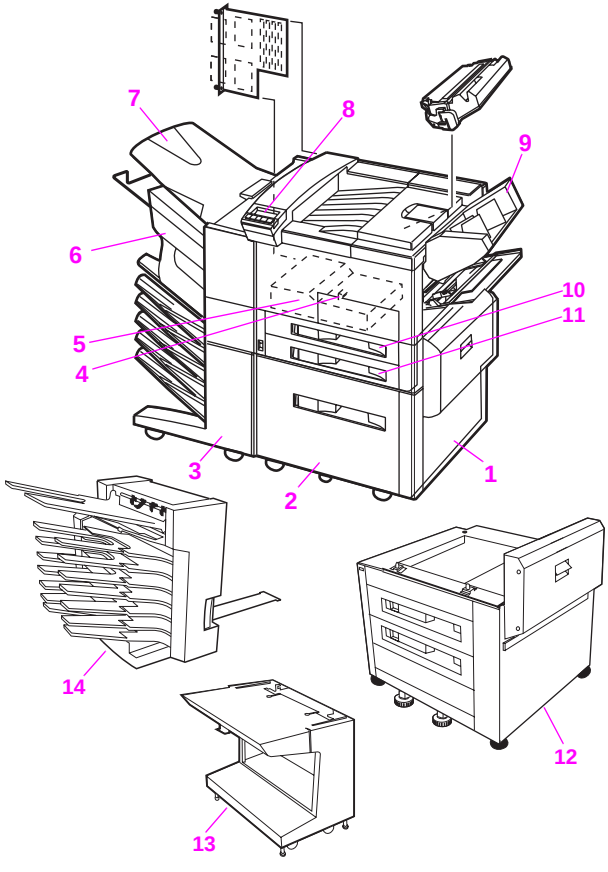
Parts for the HP LaserJet 3100



HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	LIU Board (U.S.) LIU Board (Worldwide)	C3948-67903 C3948-67904
2	ECU (Engine Controller Board) 110V ECU 220 V	RG5-4690-000CN RG5-4691-000CN
3	Laser Scanner Assembly	RG5-3494-050CN
4	Fixing/Fusing Assembly 110V Fixing/Fusing Assembly 220V	RG5-4678-000CN RG5-4681-000CN
5	Fixing Assembly Pressure Roller	RF5-2362-000CN
6	Formatter (without shield)	C3949-67901
7	Cable ECU to Formatter	RH2-5346-000CN
8	Fuser Exit Roller Assembly	RF5-2368-000CN
	Foot (4)	RF5-2663-000CN
	Speaker	RH6-3845-000CN
	Cable, Laser	RG5-2035-000CN
	Motor, D.C. 12V	RH7-1320-000CN
	RFI Shield, Formatter	C3948-00002

Parts for HP LaserJet 8000 series

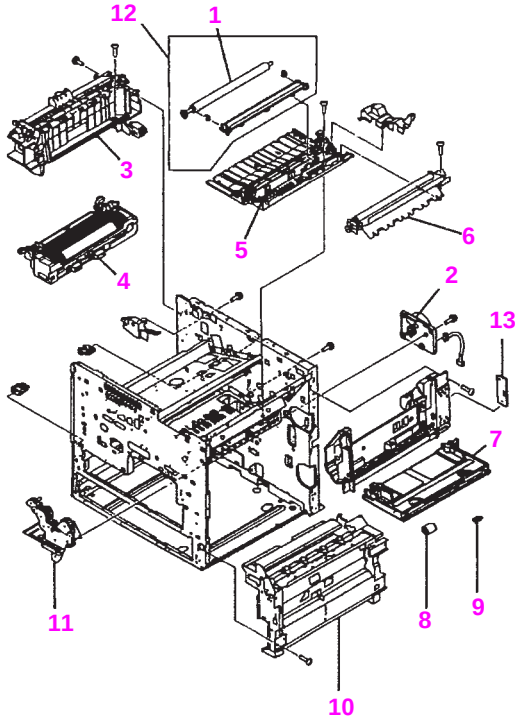


Major assembly locations (1 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	2000-sheet Input Unit Assembly	C4781A
2	Tray 4 Assembly	RG5-2155-000CN
3	Multi-Bin Mailbox	C4785B
4	Duplex Unit Roller 1	RB1-6822-000CN
5	Duplex Unit	C4782A
6	5-Bin Mailbox with Stapler	C4787A
7	Face-up Bin	RB1-6491-000CN
8	Control Panel Display	RG5-4384-000CN
9	Envelope Feeder	C3765B
10	Tray 2	RG5-3951-000CN
11	Tray 3	RG5-3952-000CN
12	Multiple Input Tray (2 x 500-sheet Input Tray)	C4780A
13	7-bin Stand	C4784A
14	7-bin Tabletop Mailbox	C4783A

Parts for HP LaserJet 8000 series

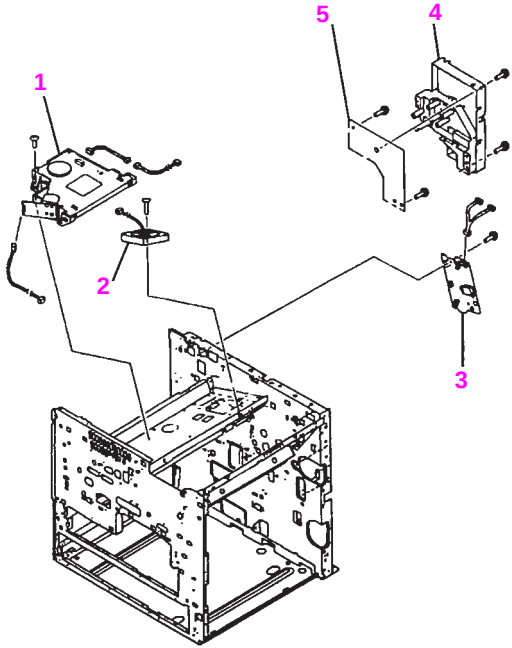


Major assembly locations (2 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Transfer Roller	RF5-1412-000CN
2	Main Motor	RH7-1260-000CN
3	Face-down Delivery Assembly	RG5-1874-000CN
4	Fusing Assembly 100V-120v	C3166-69012**
4	Fusing Assembly 220V-240v	C3166-69013**
5	Feeder Assembly	RG5-1834-000CN
6	Registration Assembly	RG5-1833-000CN
7	Tray 1 Pick-up Assembly	RG5-1880-100CN
8	Tray 1 Feed Roller	RB1-6730-000CN
9	Tray 1 Separation Pad	RF5-1455-000CN
10	Paper Input Unit (PIU)*	C3166-69011-000**
11	Main Gear Assembly	RG5-1847-000CN
12	Transfer Roller Assembly	RG5-1887-000CN
13	Tray 1 PCA	RG5-1884-000CN

**These parts require exchange.

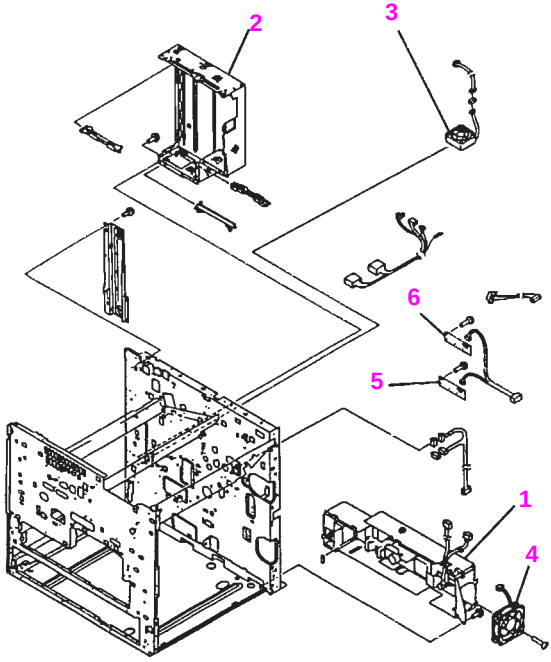


Major assembly locations (3 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Laser Scanner Assembly	C3166-69006**
2	Fan 1	RH7-1266-000CN
3	Switch/Sensor PCA	RG5-1846-000CN
4	High Voltage Power Supply*	C3166-69005**
5	DC Controller PCA*	C3166-69010**

**These parts require exchange.



Major assembly locations (4 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Low Voltage Power Supply, 110V-220V	C3166-69007**
1	Low Voltage Power Supply, Universal	C3166-69008**
2	Formatter	C4186-69001**
3	Fan 3	RH7-1271-000CN
4	Fan 2	RH7-1266-000CN
5&6	Paper Size Sensing PCA, Trays 2 and 3	RG5-1845-000CN

**These parts require exchange.

9 Image quality

Overview

This chapter provides examples of image defects and a list of remedies. Repetitive image defect rulers are supplied at the end of the chapter to use when measuring the approximate distances between repetitive image defects.

Cleaning page

For print-quality defects, try generating a cleaning page from the printer's control panel (4000, 5000, or 8000 series) or from the JetSuite Pro software (3100). The HP LaserJet Cleaning Utility works on all HP monochrome printers, regardless of driver type. Running the utility at regular intervals can extend the useful life of the fuser and reduce service procedures.

If your printer can not generate a cleaning page, you can download the HP LaserJet Cleaning Utility file and obtain instructions on its usage by accessing the worldwide web at www.hp.com/cposupport/eschome.html.

Note

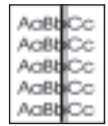
For the cleaning page to work properly, make sure to print the page on copier grade paper (not bond or rough paper).

Image Defect Table

For more information, see the page numbers below each image.



Background scatter (see page 142)



Black lines (see page 142)



Black pages (see page 143)



Blank page (see page 144)



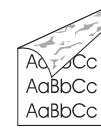
Blank spots (see page 145)



Bottom of page is blank or graphic image is cut off (see page 145)



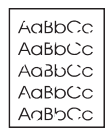
Character voids (see page 146)



Dirt on back of page (see page 146)



DIstorted image (see page 146)



Dropouts (see page 147)

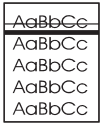


Faded print or bubbles (see page 147)

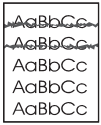


Gray background (see page 148)

9



Horizontal black lines or smears (see page 148)



Horizontal smudges (see page 148)



Horizontal white lines (see page 149)



Light print, dark print, faded print (see page 149)



Loose toner (see page 149)



Outgoing faxes/ copies/scanned images are too light or too dark (see page 150)



Print is faded or vertically aligned white streaks are apparent (see page 150)



Random black spots (see page 151)



Repetitive defects (see page 151)



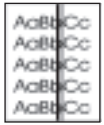
Scanned images have black dots or streaks in top and bottom margins (see page 151)



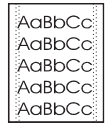
Scanned text is unclear (see page 152)



Toner Smear (see page 152)



Vertical black lines
(see page 152)



Vertical dots
(see page 153)



Vertical white lines
(see page 153)

Image defect details

Background scatter

- The media does not meet HP specifications.
- The toner cartridge is defective.
- Toner has spilled inside the product.
- The pickup roller is dirty.
- The print density setting is too low.
- The transfer roller is dirty or worn.

Black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fusing assembly is contaminated or damaged.
- The static eliminator teeth are contaminated or defective.

Black pages

- The high-voltage power supply connections are dirty.
- The high-voltage power supply is installed improperly. If the high-voltage power supply has been removed and replaced, it may not be seated properly.
- Check the ECU (engine controller unit) for damage.
- The toner cartridge is defective.
- Light is leaking into the printer.
  - Ensure all covers are in place.
- The primary charging roller is bad.
- The DC controller PCA is defective.
- The laser scanner assembly is faulty (turning laser on continuously).
- The connectors between the laser scanner unit and the DC controller PCA are not seated properly or are defective.
- There is a problem in the ECU or the laser scanner.

Blank pages

- No toner is available for print.
- The laser shutter is defective.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- No transfer roller voltage.
  - Check the ECU.
- No developing bias.
  - Check the ECU.
- Check the ground path.
- The laser scanner cable assembly is defective.
- There is a problem with the software's configuration.
- There is a problem with the network configuration. Some sharing devices on networks may generate a blank page as a separator.
  - Check with the network administrator.
- The printer may be feeding two or more pages at once because the paper is difficult to separate.
- The sealing tape has been left in the toner cartridge.
- The toner cartridge is empty or defective.
- The laser scanner door does not open properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner shutter door for proper operation.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- There is no transfer roller voltage.
  - Perform the Half Self-Test Functional Check to check all other electrophotographic processes.
  - Replace the transfer roller if necessary.
- The high-voltage connector springs are dirty or defective.

- The high-voltage connectors are mounted on the high-voltage power supply PCA and protrude into the toner cartridge cavity.
  - Check the springs for functionality. Clean if dirty; replace if defective or missing.
- The high-voltage power supply PCA is defective.
- The DC controller PCA is defective.
- There is no developing bias.
  - Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum.
  - Replace the ECU.
- There is no drum ground path.
  - Check the drum ground.
  - Replace the ECU.
- The laser scanner cable assembly is defective.
- The page length and margins are not set correctly for the paper size.
- Your software application is sending an extra page-eject command.
  - Check the software's printing configuration information.

Blank spots

- The paper does not meet HP paper specifications or is stored improperly.
- The toner cartridge is defective.
- The transfer roller is dirty or deformed.

Bottom of page is blank or graphic image is cut off

- The page is too complex. (There is not enough memory to process the page.)
  - Set the resolution to 300 dpi through the software or printer driver. See the online help for printer driver issues.

Character voids

- The surface of the paper is too rough or the paper's surface is too smooth for proper toner adhesion.
  - Use paper that meets HP paper specifications.
- Printing is on the wrong side of the paper.
- The transparencies are not designed for proper toner adhesion.
- The transfer roller is bad.
- The laser scanner assembly is bad.

Dirt on back

- Dirt is inside of the printer (tray separation roller, feed roller, fuser, toner cartridge).
- The paper does not meet HP paper specifications or is stored improperly.
- The pressure roller in the fuser is contaminated.

Distorted image

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet HP specifications.
- The output bin is incorrect for the paper type.
- The connection of the cables to the laser scanner is poor.
- The connection of the cables to the ECU is poor.
- The laser scanner is defective.
- The ECU is defective.

Dropouts

- The paper does not meet HP paper specifications.
- The printer's operating environment does not meet specifications.
- The toner density setting is wrong.
- A single sheet of paper is defective.
  - Try reprinting the job.
- The fuser setting was wrong for the paper type.*
- The DC controller PCA is defective.
- The high-voltage power supply PCA is defective.
- The transfer roller is defective.
- "Draft mode" or "economode" is selected in the software.

*This feature does not apply to all products.

Faded print or bubbles

- Check the ground path.
- Replace the ECU.
- The toner supply is low.
- The print density is set incorrectly.
  - Change to a darker setting and retry printing.
- If economode is on, turn it off.
- Try a different paper lot.
- Inspect the transfer roller for proper installation and contact.
  - Replace the transfer roller if it is damaged.
- The laser scanner door is not opening properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner door for proper operation.
- The high-voltage contact springs are dirty or defective.
- The DC controller PCA is defective.

Gray background

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet specifications.
- The toner density setting is wrong.
- The toner cartridge is faulty.
- The inside of the printer is dirty.
- The printer is printing on envelope seams.
  - Move the text to an area without seams.

Horizontal black lines or smears

- The laser scanner assembly or ECU is defective.
- The toner cartridge was improperly installed.
- The toner cartridge is defective.
- The printer needs to be cleaned.
- There is a problem in the heating element.
- A gear is damaged.

3100 only

- Horizontal lines appear in the margins and across entire pages of faxes that are being sent.
  - The HP LaserJet 3100 product needs to be cleaned.
  - There is a problem in the contact image sensor.

Horizontal smudges

- The paper path is contaminated or damaged.

Horizontal white lines

- The toner cartridge may be defective.
- The fusing assembly is dirty or defective.
- The laser scanner assembly or ECU may be faulty.
- There is dirt in the laser path.
- The mirror in the laser scanner is dirty.

Light print, dark print, faded print

- The toner density setting is wrong.
- The toner cartridge is low.
- The transfer roller is defective.
- The paper does not meet HP paper specifications or is stored improperly.
- Contact is poor to the ECU.
- The laser scanner is defective.
- The ECU is defective.
- The high-voltage power supply is defective.

Loose toner

- Dirt is in the printer.
- The toner cartridge is defective.
- Paper might be too smooth.
- The fuser setting for the paper type is wrong.
- The fuser is defective.

Outgoing faxes/copies/scanned images are too light or too dark

- The contrast is not set correctly.
- The original image is very light or very dark.
- The scanned image is too light or too dark because the original was on a colored paper.

3100 only

- Recalibrate the product.

Print is faded or vertically aligned white steaks are apparent

- The toner cartridge is getting low on toner.
- The paper you are using does not meet HP paper specifications.
- The toner density setting is not adjusted correctly.
- The internal mirror or optics are contaminated.
- The laser scanner is damaged.
- The document scanner needs to be recalibrated.
- There is a problem in the contact image sensor.
- There is a problem in the formatter.

3100 only

- The HP LaserJet 3100 product needs to be cleaned.
- The HP LaserJet 3100 product is damaged.

Random black spots

- The paper you are using does not meet HP paper specifications.
- You are printing on the wrong side of the paper.
- The printer requires cleaning with a cleaning page.
- The toner cartridge is damaged.

Repetitive defects

- Locate the defective roller in the printer.
- There is dirt on the roller or the roller is defective.
- The toner cartridge is damaged.
- The rollers are dirty.
- The fusing assembly is defective or dirty.
- The gears are worn, causing slippage or jumping.
- The paper does not meet HP paper specifications.

Scanned images have black dots or streaks in top and bottom margins

3100 Only

- There is ink, glue, white-out, or some other substance on the contact image sensor.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Scanned text is unclear

3100 Only

- The contrast, resolution, or brightness needs to be adjusted before scanning.
- The original is on colored paper.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Toner smear

- There is dirt on the paper.
- The fusing rollers are dirty.
- The paper does not meet HP specifications.
- The toner cartridge is defective.
- Wrong fuser setting for the paper type.
- The fusing assembly is defective.
- There is dirt in the printer.
- The static eliminator is dirty or is not grounded, allowing a static charge to remain on a page.
- The DC controller PCA is defective.

Vertical black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fuser entrance is dirty.
- The fuser has scratches on it.
- This may be a repetitive defect. If so, the lines will be repeated at a consistent interval down the page.
- The printer needs to be cleaned.
- There is a problem in the heating element.

3100 Only

- Scanned images have unwanted lines through them.
  - There is ink, glue, white-out, or some other substance on the contact image sensor.
  - Slick paper could be the problem; use a carrier sheet to send the item.
  - Recalibrate the product.

Vertical dots

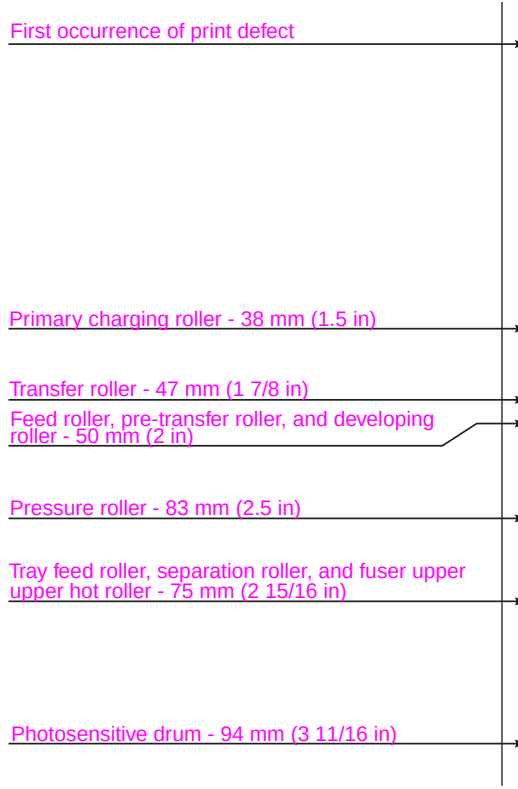
- The static eliminator teeth are dirty.
- There is poor contact between the static eliminator and the ECU.
- The transfer roller is deformed or it has deteriorated.
- The ECU is defective.

Vertical white lines

- There is a lack of toner or the toner cartridge is faulty.
- There is dirt in the laser path.
- The fuser is defective.
- A mirror in the laser scanner is dirty.

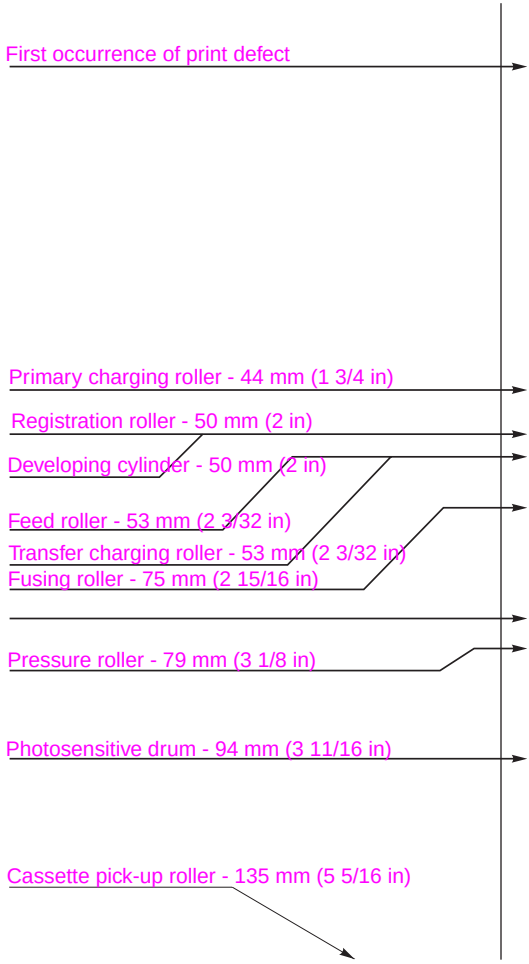
Notes

LJ 4000 series repetitive defect ruler


First occurrence of print defect
Primary charging roller - 38 mm (1.5 in)
Transfer roller - 47 mm (1 7/8 in)
Feed roller, pre-transfer roller, and developing roller - 50 mm (2 in)
Pressure roller - 83 mm (2.5 in)
Tray feed roller, separation roller, and fuser upper upper hot roller - 75 mm (2 15/16 in)
Photosensitive drum - 94 mm (3 11/16 in)

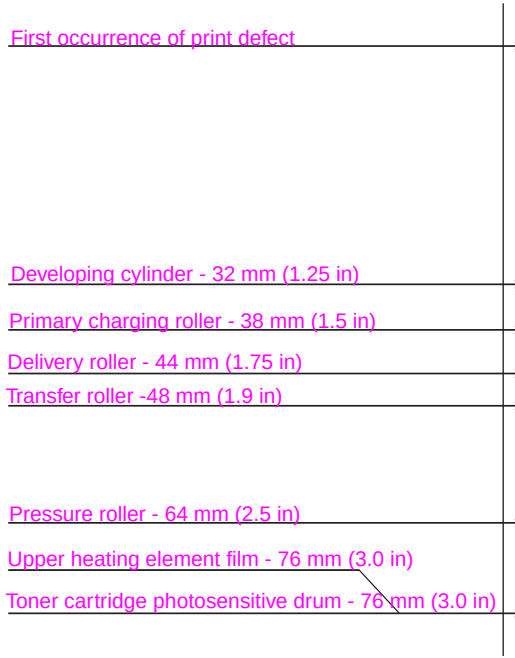
Notes

LJ 5000 series repetitive defect ruler


First occurrence of print defect
Primary charging roller - 44 mm (1 3/4 in)
Registration roller - 50 mm (2 in)
Developing cylinder - 50 mm (2 in)
Feed roller - 53 mm (2 3/32 in)
Transfer charging roller - 53 mm (2 3/32 in)
Fusing roller - 75 mm (2 15/16 in)
Pressure roller - 79 mm (3 1/8 in)
Photosensitive drum - 94 mm (3 11/16 in)
Cassette pick-up roller - 135 mm (5 5/16 in)

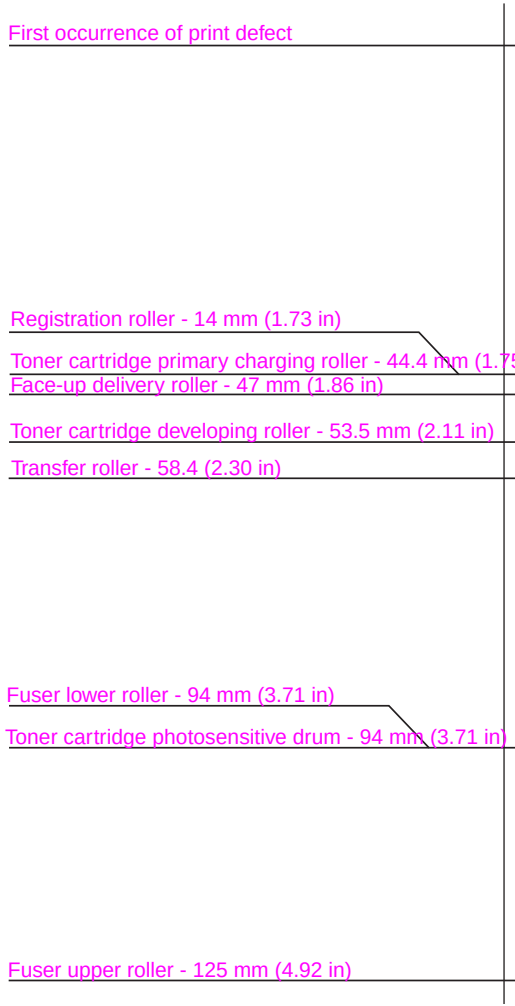
Notes

LJ 3100 repetitive defect ruler


First occurrence of print defect
Developing cylinder - 32 mm (1.25 in)
Primary charging roller - 38 mm (1.5 in)
Delivery roller - 44 mm (1.75 in)
Transfer roller -48 mm (1.9 in)
Pressure roller - 64 mm (2.5 in)
Upper heating element film - 76 mm (3.0 in)
Toner cartridge photosensitive drum - 76 mm (3.0 in)

Notes

8000 repetitive defect ruler


First occurrence of print defect
Registration roller - 14 mm (1.73 in)
Toner cartridge primary charging roller - 44.4 mm (1.75)
Face-up delivery roller - 47 mm (1.86 in)
Toner cartridge developing roller - 53.5 mm (2.11 in)
Transfer roller - 58.4 (2.30 in)
Fuser lower roller - 94 mm (3.71 in)
Toner cartridge photosensitive drum - 94 mm (3.71 in)
Fuser upper roller - 125 mm (4.92 in)

10 Wiring diagrams

Overview

This chapter provides wiring diagrams for printers supported in this guide.

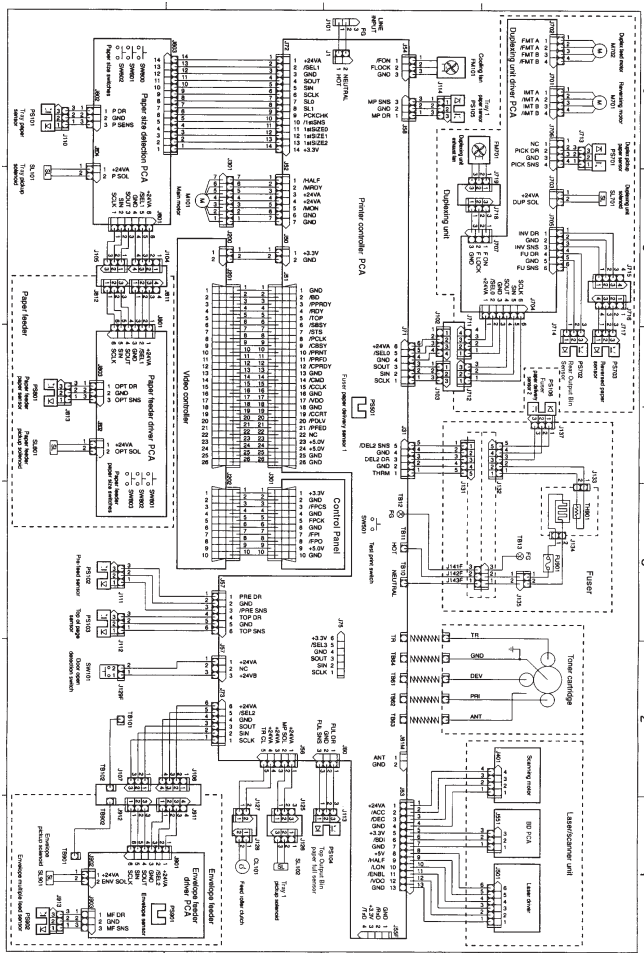


Figure 10-1 Wiring diagram (HP LaserJet 4000/4000 N)

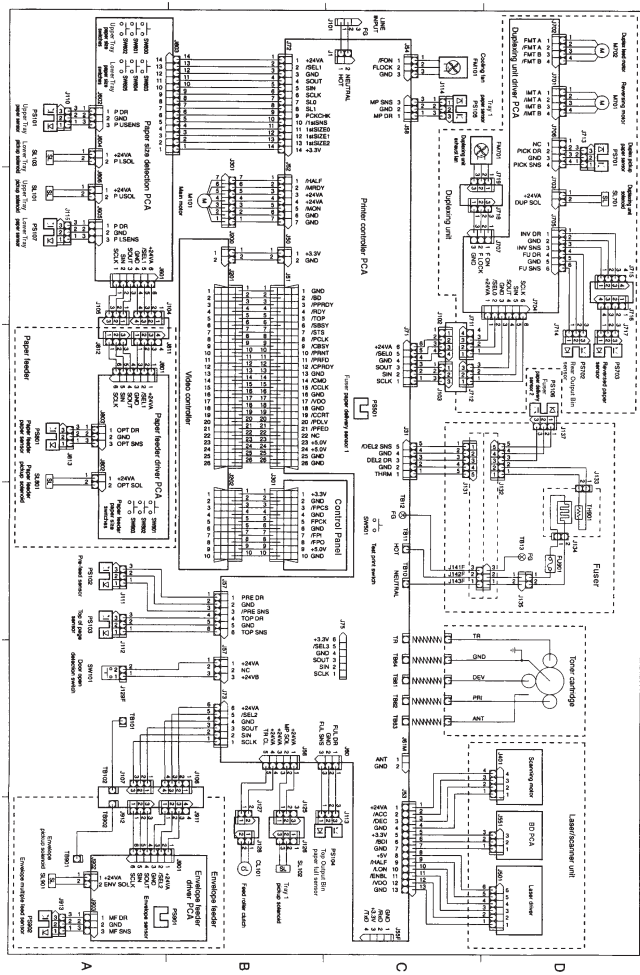


Figure 10-2 Wiring diagram (HP LaserJet 4000 T/4000 TN)

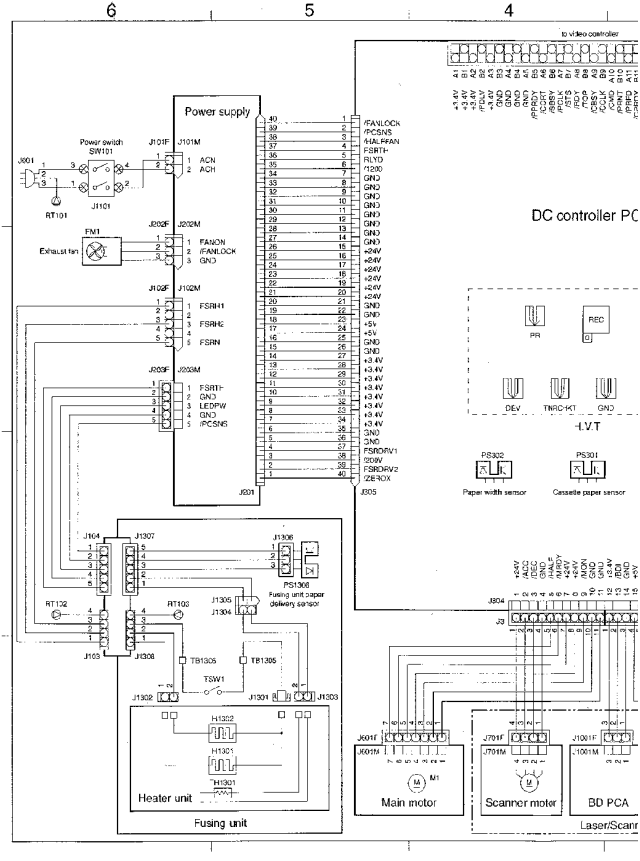


Figure 10-3 Wiring diagram (HP LaserJet 5000 series, 1 of 2)

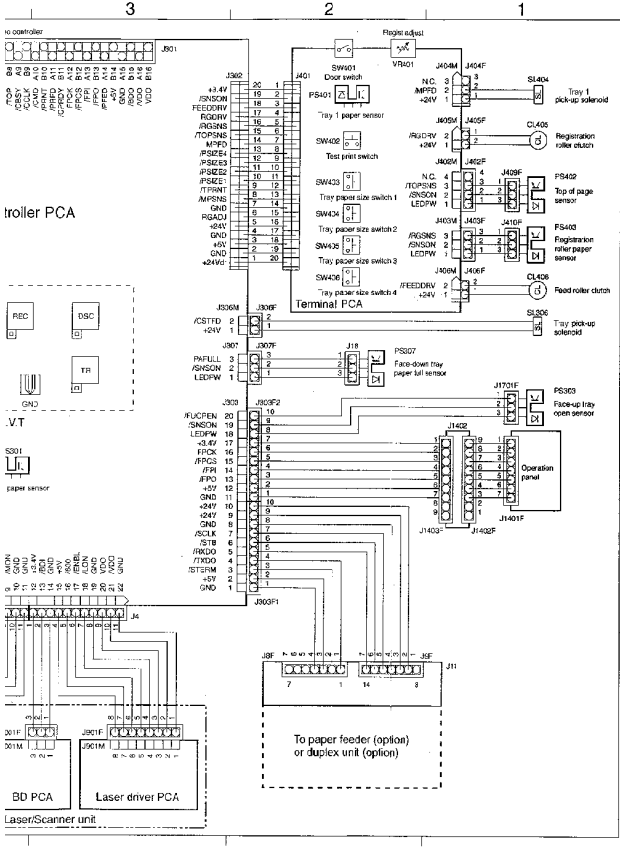


Figure 10-4 Wiring diagram (HP LaserJet 5000 series, 2 of 2)

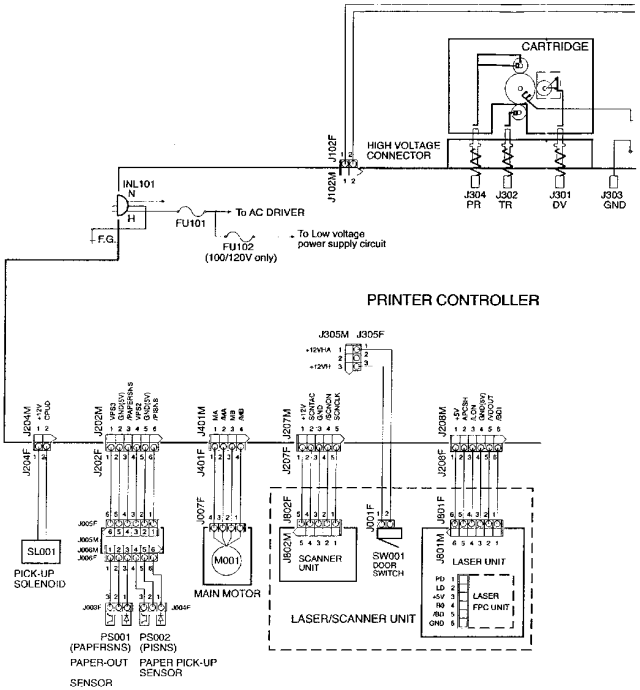


Figure 10-5 Wiring diagram (HP LaserJet 3100, 1 of 2)

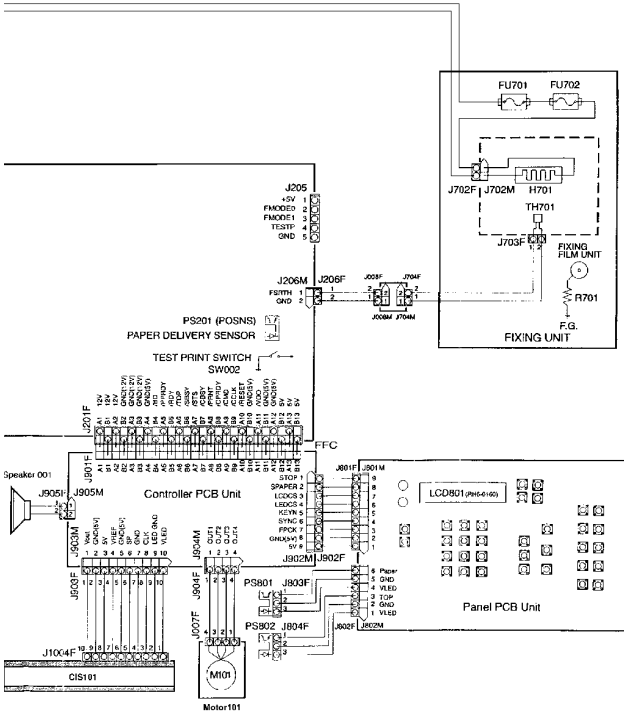


Figure 10-6 Wiring diagram (HP LaserJet 3100, 2 of 2)

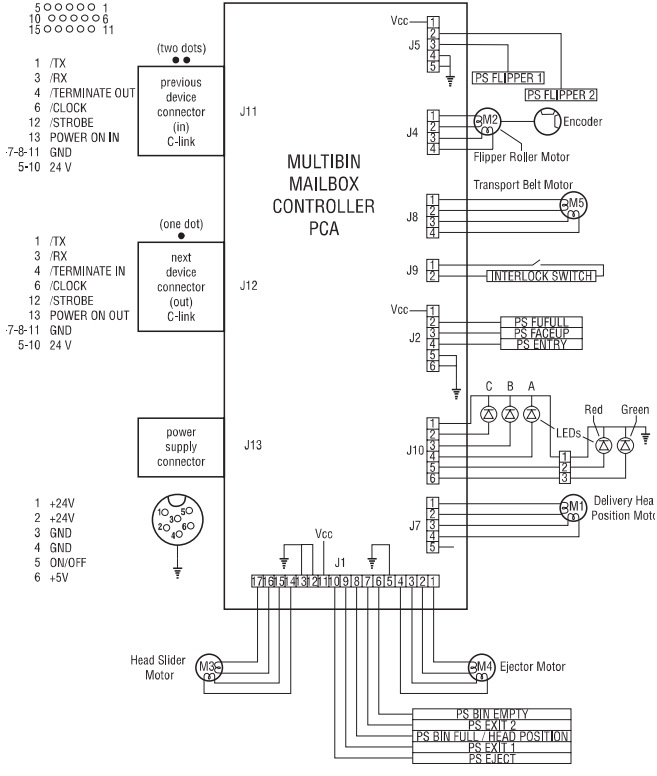


Figure 10-7 Wiring diagram (HP LaserJet 8000 series, 1 of 2)

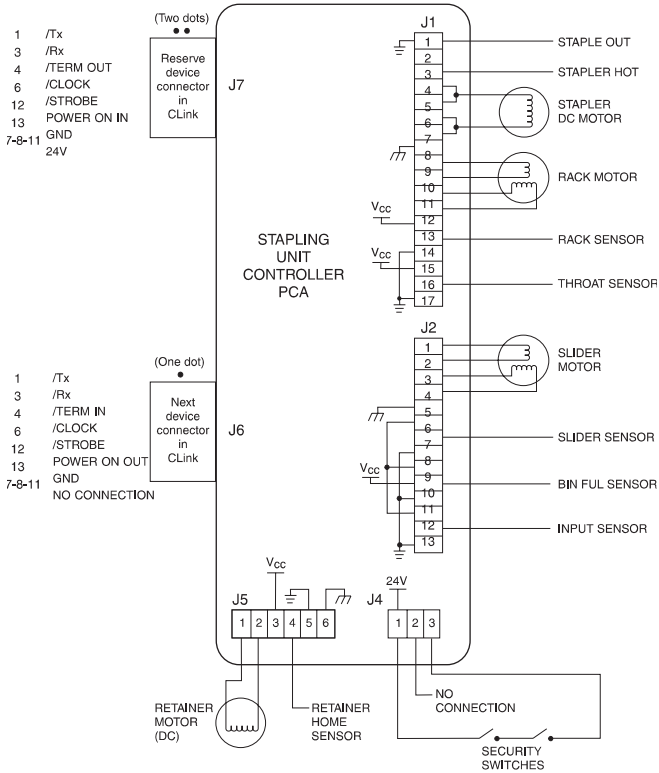


Figure 10-8 Wiring diagram (HP LaserJet 8000 series, 2 of 2)

11 Services and support/ resources and training

Overview

This chapter provides information on obtaining training, support, and materials.

How to get training

Lecture/lab training (U.S. only)

Service technicians who want individual, hands-on training can attend regularly scheduled lecture/lab training classes. These classes are offered throughout the country. To receive the latest schedule, call HP FIRST at (800) 333-1917, or see the HP website (www.hp.com/go/resellertraining) and request document ID number 9104. The latest schedule will immediately be sent to the fax number of your choice. Class schedule and registration information can also be obtained by calling the centralized registration center at (512) 434-1520.

Self-paced training kits

Product	Description	Part number
All LaserJet Printers	Basic Hardware Training Course (prerequisite for all LaserJet service training)	5961-0880
	Paper Training Video	5961-0711 (NTSC) 5961-0712 (PAL)
LJ 4000/4000 N/ 4000 T/4000 TN	Self-paced Training Kit NTSC Format PAL Format	 C4118-61101 C4118-61102
LJ 5000/5000 N/ 5000 GN	Self-paced Training Kit NTSC Format PAL Format	 C4110-61101 C4110-61102
LJ 3100	Self-paced Training Kit NTSC Format PAL Format	 C3948-61101 C3948-61102
LJ 8000/ LJ Mopier 240	Self-paced Training Kit NTSC Format PAL Format	 C4085-67901 C4085-67902

Support resources

North American Response Center (NARC)

The North American Response Center (NARC) is available for technical support to assist service technicians. The NARC can be reached at (800) 544-9976 (U.S.).

Other areas

Outside of North America and Europe, contact your local HP sales office for assistance in obtaining technical support.

HP FIRST fax system

HP FIRST (Fax Information Retrieval Support Technology) is a phone-in fax service that provides technical information to HP LaserJet users as well as to service personnel. Receiving a fax requires a group-3 facsimile machine or fax card. The following service-related information is available:

- service notes (HP-authorized dealers)
- application notes
- product data sheets
- material safety data sheets (MSDS)
- typeface and accessory information
- printer support software information
- toner information
- forms for requesting drivers and the software matrix

To retrieve service notes

(Authorized dealers, HP customer engineers (CEs) ONLY)

1. Dial (1) (800) 333-1917 (U.S.) from any touch-tone phone.
2. Select (1) for HP FIRST.
3. Select (3) for a password customer.
4. Enter the password: 737842.
5. Follow the voice prompts to enter a document ID number or to select the index.
6. Follow the voice prompts to enter your fax number or the fax number of your customer.

Note
Delivery time depends on the length and complexity of the document.

HP FIRST, U.S.

Call the HP ASAP system (800) 333-1917 (U.S.) and follow the voice prompts to enter HP FIRST.

HP FIRST, Europe

Call HP FIRST at one of the following numbers:

United Kingdom	(44) (134) 0800-960271
Netherlands	(31) (20) 0800-222420
Belgium (Dutch)	(32) (2) 0800-11906
Germany	(49) (13) 081-0061
Switzerland (German)	(41) (1) 0800-551527
Austria	(43) (1) 0660-8128

For English service outside the above countries, call:
(31) (20) 681-5792.

HP end-user support options

Local support assistance

The user's first source of assistance should be their local dealer or service center. HP continuously provides local computer dealers and service centers with the latest information regarding products and services. To locate the nearest authorized dealer or service center, phone (800) 243-9816 (U.S.) or (800) 387-3867 (Canada).

24-hour support information

Phone (800) 333-1917 to access the HP ASAP system for 24-hour automated support services. User support information includes notes for common software applications and troubleshooting tips. Users may request up to three documents per call.

Electronic information services

For 24-hour access to information via modem, we suggest:

- **CompuServe -** The CompuServe HP Peripherals forum (GO HPPER) provides printer drivers and interactive sharing of technical communication. To subscribe, call CompuServe, Inc. at (800) 524-3388. **Note**: CompuServe is not an official HP support channel, but the forum is maintained and supported by users.
- **Internet -** Printer drivers and product and support information can be obtained from the HP anonymous file transfer protocol (FTP) site 192.6.71.2 or ftp-boi.external.hp.com. The site is available to anyone with FTP access to the Internet. Access through the World Wide Web is available at URL http://www.hp.com/.

Printer drivers by mail

To obtain printer drivers, contact the software application manufacturer. HP distributes printer drivers for a few of the most popular applications. Call (970) 339-7009, 6 days a week, 24 hours a day (closed Sundays). Shipping and handling charges may apply on some printer drivers.

Telephone assistance – in warranty

Call (1) (208) 323-2551 Monday through Friday from 6 am to 10 pm, Saturday 9 am to 4 pm (Mountain Time) free of charge during the warranty period. However, your standard long-distance phone charges still apply. Have your system nearby and your serial number ready when calling.

Telephone assistance – post-warranty

Post-warranty telephone assistance is available to answer your product usage questions. Call (1) (900) 555-1500 ($2.50 per minute, U.S. only) or call 1-800-999-1148 ($25 per call, Visa or MasterCard, U.S. and Canada) Monday through Friday from 7 am to 6 pm and Saturday from 9 am to 3 pm (Mountain Time). *Charges begin only when you connect with a support technician. Prices subject to change.*

Hardware repair services

To find a local authorized repair center for hardware repair needs, call (800) 243-9816. HP also offers a variety of service contract options to complement the standard warranty. Call (800) 743-8308 (U.S.) or (800) 268-1221 (Canada).

12 Hewlett-Packard LaserJet Companion

Overview

This section provides information on the LaserJet 300 DPI page scanner, which is available in three models.

Hewlett-Packard LaserJet Companion

The HP LaserJet Companion includes the following models:

- C3989A Companion
- C3079A Companion SE
- C4106A Companion XI

(These are all the same product except for minor software differences.)

Description

The HP LaserJet Companion is a 300-DPI page scanner, parallel port pass-through accessory designed for Hewlett-Packard LaserJet 4000 series printers.

Warranty

The HP LaserJet Companion comes with a 1-year warranty, offering Central Repair only (no dealer repairs); Express Exchange (U.S. and Canada); and Repair and Return (Worldwide).

Supported media

- The following media sizes are supported:
  - Maximum: 216 mm x 762 mm (8.5 by 30 inch)
  - Minimum: 51 mm x 89 mm (2 by 3.5 inch)
- The following media weights are supported:
  - 60 to 105 g/m^2 (16 lb to 28 lb)

Skew specifications

Some skew is normal. The maximum amount of skew that is considered normal is 3.35 millimeters (0.13 inches) over 279 millimeters (11 inches). Skew exceeding the normal amount may be caused by media that is damaged, media that does not meet the specifications, or media that is loaded incorrectly.

If media meets specifications, is not damaged, and is correctly loaded, but skew remains excessive, clean the separation pad, pickup roller, and scan roller.

Cleaning

Clean these parts with isopropyl alcohol:

- separation pad
- pickup roller
- white scan roller

Clean the image sensor with glass cleaner.

Cables

Cable part numbers

HP part number	Part description
8120-6963	Cable shipped with the HP LaserJet Companion
C2950A	Printer parallel cable (IEEE-1284) 2 meters (7 feet)
C2951A	Printer parallel cable (IEEE-1284) 3 meters (10 feet)

Power supply modules

Output = 22VDC, + or - 25%

Power supply part numbers

HP part number	Part description
9100-5534	120 Vac 60 Hz (US/CN/MX)
9100-5535	230 Vac 50 Hz (EUROPE)
9100-5536	240 Vac 50 Hz (U.K.)
9100-5537	220 Vac 50 Hz (ARG)
9100-5539	240 Vac 50 Hz (AUSTRL)
9100-5541	220 Vac 50 Hz (TI/INDO)
9100-5542	220 Vac 50 Hz (HNG KNG)

A Acronyms and abbreviations

Acronyms and abbreviations

AC	Alternating current
AUTOCONT	Automatic continue
BNC	A 10-Base 2 connector used with coaxial cables
CE	Customer engineer
CFG	Configuration on control panel
DC	Direct current
DCPS	Direct current power supply
MS-DOS	Disk operating system
DPI	Dots per inch
DTR	Data terminal ready
DTR LINE	Data terminal ready line
ECU	Engine control unit
EP	Electro-photographic
EPH	External paper handling
FRU	Field replacement unit
FTP	File transfer protocol
HP ASAP	Hewlett-Packard Automated Support Access Program
HP FIRST	Hewlett-Packard Fax information retrieval support technology

Acronyms and abbreviations (continued)

HP-GL/2	Hewlett-Packard graphics language
HTML	Hypertext markup language
HV	High voltage
HVPS	High-voltage power supply
I/O	Input/output
IR	Infrared
IrDA	Infrared Data Association
IRQ	Interrupt request
JEIDA	A type of memory module
JOBID	Print job identification
JP	Jobpack
LAN	Local area network
LED	Light-emitting diode
LVPS	Low-voltage power supply
LC PICKUP ROLLER	Lower-cassette pickup roller
MB	Megabyte
MEM	Memory
MIO	Modular input/output
MP PICKUP ROLLER	Multipurpose tray pickup roller
MP Tray	Multipurpose tray
MSDS	Material safety data sheets
NARC	North American Response Center
NTSC	National Television Standard Committee
NVRAM	Nonvolatile random-access memory
Ohm	A unit of measure of electrical resistance
PAL	Phase alternation line format
PCA	Printed-circuit assembly

Acronyms and abbreviations (continued)

PCB	Printed circuit board
PCL	Printer command language
PC PICKUP ROLLER	Paper-cassette pickup roller
PIU	Paper input unit
PJL	Printer job language
RAM	Random-access memory
RIP	Raster image process
ROM	Read-only memory
SIMM	Single inline memory module
SMO	Support materials organization
SMODE	Service mode
SPEC	Specifications
SRVR	Server
TCP/IP	Transmission control protocol/Internet protocol
TS I/T52	Thermoswitch
UNIX®	Network operating system using TCP/IP protocol
URL	Universal resource locator
VDC	Volts direct current

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Service Websites

Electronic Support Center

Software, drivers, support documentation, frequently asked questions

http://www.hp.com/go/support

HP Technical Training (North America)

Classes and schedules

http://www.hp.com/go/resellertraining

Parts

Parts information

http://outfield.external.hp.com/spi/welcome.htm

Service Phone Numbers

All numbers listed are for North America only.

Dealer Response Line
Dealer pre/post sales and service support
(800) 544-9976 *U.S. Only* **(800) 363-6594** *Canada*

Customer Care Center
User questions, applications, LaserJet Fax
(208) 323-2551

HP First Fax – Information Retrieval System
Service notes, sales information, user help, software information
(208) 344-4809 **(800) 333-1917** *U.S. Only*

Customer Information Center
Sales dealer locations, literature, and specifications
(800) 752-0900 *U.S. Only*

HP Driver Distribution Center
Printer drivers and software application notes orders
(970) 339-7009 *U.S. Only*

Customer Support Sales Center
Authorized repair locations
(800) 243-9816 *U.S. Only*

Parts Direct Ordering / SMO
Service parts, supplies, and accessories orders
(800) 227-8164 *U.S. Only*

Parts Identification
Service part number identification
(916) 783-0804

North American Response Center
Online technical assistance
(800) 477-5526 *HP Only*

Corvallis Customer Service Center
Express exchange/customer return services
(916) 785-1200

Supported Products

HP LaserJet 4000/4000T/4000N/4000TN printer
HP LaserJet Companion 3989A
HP LaserJet 5000/5000N/5000GN printer
HP LaserJet 3100 multifunction printer
HP LaserJet 8000/8000N/8000DN printer
HP LaserJet 240 Mopier



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